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NOTIFICATION OF ZONING HEARING EXAMINER'S DECISION

DATE OF DECISION: July 25, 2006

HEARING EXAMINER: Robert F. Kahoe, Jr.

RE: Zoning Appeal Case No. 5429

APPLICANTS: Florida Rock Industries, Inc. and
The Arundel Corporation

LOCATION: Level and Lapidum Roads, Havre de Grace


REQUEST: Special Exception to allow overburden storage in an
AG, R1 and R2 District and, if necessary,
modification of Board of Appeals Case No. 4103

Enclosed is an official copy of the Hearing Examiner's decision relative to the above referenced case.

The Hearing Examiner's decision shall become final **AUGUST 22, 2006**.

This decision shall be considered a recommended opinion to the Harford County Council, sitting as The Board of Appeals, if a written request for Final Argument before the Harford County Council is filed by the close of business on above date by the Applicant, Applicant's Attorney, Opponents, People's Counsel, or a person aggrieved who was a party to the proceedings before the Hearing Examiner. In addition, any Board Member, upon written notice to the Council Administrator, may request final argument.

COUNTY COUNCIL OF HARFORD COUNTY


Barbara J. O' Connor
Council Administrator

Enclosure



APPLICANTS:

**Florida Rock Industries, Inc. and
The Arundel Corporation**

**REQUEST: A special exception pursuant to
§ 267-53E(1) of the Harford County Code to
allow overburden storage as part of a mineral
extraction and processing use and, if necessary,
a modification of Case No. 4103 pursuant to
§ 267-52B of the Harford County Code**

**HEARING DATES: December 1, 2004 -
November 30, 2005**

BEFORE THE

ZONING HEARING EXAMINER

FOR

HARFORD COUNTY

BOARD OF APPEALS

Case No. 5429

ZONING HEARING EXAMINER'S RECOMMENDED DECISION

APPLICANT/OWNER: The Arundel Corporation

LOCATION: North side of Level Road, Maryland Route 155
North of the City Limits of Havre de Grace
Tax Map: 44 / Various Parcels
Sixth (6th) Election District

PRESENT ZONING: AG / Agricultural
R1 / Urban Residential Districts

RELIEF REQUESTED

1. A special exception approval pursuant to § 267-53E(1) of the Harford County Code to place an overburden stock pile as part of a mineral extraction and processing use on the subject property zoned R1, Urban Residential, and AG, Agricultural.
2. If necessary, a modification of the special exception approval granted in Board of Appeals Case No. 4103 pursuant to § 267-52B of the Harford County Code to permit the Applicant to place an overburden storage pile as part of a mineral extraction processing use on the subject property zoned AG, Agricultural.

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BACKGROUND

The Applicant (hereinafter sometimes referred to as “Arundel”) operates a stone quarry on property located to the northwest of and adjoining the City of Havre de Grace corporate limits, south of Interstate 95, north of Maryland Route 155 (Level Road), east of Lapidum Road, and west of and adjoining the Susquehanna River. The Arundel properties occupy much of the property delineated by these boundaries with the exception of that residential development known as Meadowvale, the Meadowvale Elementary School, and some other scattered residential properties to the east. The property owned by Arundel dominates Meadowvale and the residential area known as Susquehanna River Hills to the west. It is in these two subdivisions that live most, but not all, of the opponents of this request.

A somewhat natural and understandable tension exists between the neighbors and Arundel. Arundel operates a large surface mining operation which distributes many millions of tons of rock by both highway and water corridors. The residents, many of whom have lived in the area for much of their adult lives, have witnessed the expansion of Arundel over the years and feel threatened by it to varying degrees. The present request, which proposes the large scale and lengthy movement of materials, has no doubt exacerbated this natural tension.

A short review of the zoning history of the Arundel property is helpful to not only help understand the reasons for the present zoning request, but also in understanding the opposition and anxiety of the neighbors.

By Decision in Case No. 409, dated August 17, 1959 (or approximately two years after the initial enactment of comprehensive zoning in Harford County), the Harford County Board of Appeals granted to Arundel a Zoning Certificate for a quarry operation and stone crushing plant over “several contiguous tracts of land”. A reference in the Decision was made to a portion of property which had been acquired from Standard Lime and Stone Company, which had apparently been operating the property as a quarry since prior to 1945. The proposed quarry was to be on a parcel of 109 acres bordering the Susquehanna River and extending inland for approximately 3,000 feet. The Decision mentioned a 100 acre parcel and Meadowvale Manor. Meadowvale, at that time, as the testimony in this case made clear, consisted of only a few homes. The 100 acre parcel was proposed to be used as a buffer for Meadowvale. In addition to the Standard Lime and Stone Company property and the 100 acre buffer property, the Applicant had also acquired a parcel from the Silver family and had divided that into three parcels.

The Decision also notes that a buffer zone with a screen of trees between the “possible limits of quarry operations and the residential development on Level Road,” was also to be installed.

Not surprisingly, the Decision also observed that a number of neighbors appeared in protest.

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Of particular note is a finding in the favorable Decision in Case No. 409 that the Silver property and the Standard Lime and Stone Company property could;

“ . . . both be operated as a quarry and crushing operation so as to provide little or no noticeable effect on the neighborhood provided certain controls were applied. . . ”.

Conditions were then imposed, including the requirement that the 100 acre buffer be maintained next to Meadowvale, and that certain activities be taken to maintain the quarry operation in a dust free condition.

It would appear, based on the Decision in Case No. 409 and a review of the Applicant's Site Plan submitted in this case, that the total property operated by Arundel at that time (1959), was very roughly 225 to 250 acres, of which 100 acres was a buffer area.

By Decision dated October 17, 1960, the Harford County Board of Appeals granted further relief affecting the subject property.¹ This Decision involved an additional 118 acres, in two tracts, located along the Susquehanna River. The request was for the conditional use (now called a special exception) to operate a quarry and stone crushing operation. Access was to have been provided from Level Road. Again, opposition was heard from neighbors. Objections were raised to noise, dust, blasting, and damage caused by increased traffic. Interestingly, the State Roads Commission objected as the “new bridge over the Susquehanna River” was to partially be located at this site.

The Board of Appeals granted the request with conditions, holding that;

“The operation of this quarry would be no more of a nuisance or source of possible danger than would a quarry on the adjoining property.”

The Board also considered the effect on recreation and the natural beauty of the Susquehanna River shore, finding the impact would be no more significant than would be in the case of “quarries operating next door”, for which permission had earlier been granted.

All was, apparently, quiet from a land use perspective until 1986 when the Harford County Board of Appeals entered its decision in Case No. 3303. This was a result of Arundel's request for interpretation of certain of the conditions in Case No. 409. The heart of this case was Arundel's having been cited for various infractions of previous imposed operating conditions, the most pertinent of which was Arundel's alleged failure to maintain the 100 acre buffer next to Meadowvale established by Case No. 409.

¹ The Applicant in that case was C.J. Langenfelter and Son, Inc.

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A review of the resulting Decision in Case No. 3303 is helpful. It identified, first of all, the total parcel then being used as being about 300 acres in size, 77 acres of which at that time being zoned General Industrial, and 223 acres zoned Agricultural. Testimony was that in 1979 the operation began to increase in size, with about 750,000 cubic yards of overburden discovered in 1980 which had been deposited by a prior quarry operator, presumably, although not identified, as being either Standard Lime and Stone Company or C.J. Langenfelter and Son, Inc. That overburden was removed and placed within the 100 acre buffer between the quarry and Meadowvale. By 1985 this buffer contained approximately one million cubic yards of overburden. Arundel's representative testified that the removal of that overburden, if found to be in violation of the prior zoning Decisions would create a substantial amount of noise and dust. There was also a question raised during the hearing of Arundel's alleged failure to maintain the roads in dust free condition. Approximately 1,500,000 tons of stone was shipped from the quarry in 1985. Needless to say, a number of neighbors again testified against Arundel, including at least one neighbor who testified in the instant case, some 20 years later. Objections were raised to the unappealing view of the overburden pile within the buffer; the generation of noise and dust; and adverse impact on property values.

The Applicant's representatives stated, in defense of the use of the 100 acre buffer for the storage of overburden, that Case No. 409 did not specifically prohibit the storage of overburden in that area.

The Board of Appeals, in its adopted Decision in Case No. 3303, recited Arundel's argument that:

“ . . . in 1959 overburden was not considered in the trade as a part, either indirectly or ancillary, of the mining operation. ”

Fortunately for Arundel's position in the present case, the Board rejected that assertion and found that the overburden had been deposited into the buffer in violation of the terms of Case No. 409.

The Board further found that storage of the overburden within the buffer area adversely impacted the residents of Meadowvale, and that Arundel had violated the earlier condition imposed by Case No. 409 in allowing the overburden pile to be developed within the 1,500 foot buffer zone (100 acre buffer). The Board noted the monumental task which Arundel faced by having to remove 1,000,000 cubic yards of overburden, or approximately 1,500,000 tons. The Board, striking a balance, then recommended that the overburden be reduced from its then existing height to a height of 40 feet maximum, with the slope to be maintained at a minimum grade of 1 to 1, and that the buffer be planted with a vegetative cover. The Board of Appeals' Decision required, accordingly, that a portion of the overburden be removed. However, much of it was allowed to remain provided it did not exceed a height of 40 feet. The Board noted in its Decision that this would help maintain a buffer between the quarry operation and Meadowvale.

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In 1991 the Board of Appeals entered its Decision in Case No. 4103, also involving the quarry property. That case involved a request for a special exception to allow Arundel's access road to be relocated to an area which was zoned agricultural, and to allow the relocation of the Applicant's crusher operation. While some neighbors apparently took part in the hearing, no serious opposition to the request was expressed and the Board granted these two modifications.

Arundel has over time accumulated additional parcels, including what is identified as the "Savin" parcel, which adjoins its blasting limit area to the south; the "Sherman" property and smaller residentially used properties to the west and adjoining Lapidum Road; and the "Green" property which is located between the Savin property and Level Road. All of these parcels are shown on Applicant's Site Plan. Together, Arundel's existing overall land mass now consists of roughly 600 acres.

Arundel's operation has also obviously significantly increased from what it was in 1957. While it shipped 1,500,000 tons in 1985 (and presumably smaller amounts in prior years), it now ships approximately 3 to 4 million tons per year.

Arundel does not now seek to expand its limit of its mining operation as allowed by previous Zoning Decisions. It does, however, seek permission to move overburden from existing storage piles, and overburden which will be generated as its mining area increases within applicable limits, to a new area located on the Green/Savin/Sherman properties, areas which are now undisturbed and which are closer to existing roadways and residences than is its present operation.

Arundel now files Case No. 5429. Over five thousand Board of Appeals cases have been filed and heard, and almost 50 years have passed, since Arundel's first filing in 1959. However, the concerns expressed by neighbors, the articulated need by Arundel to continue its quarrying operations, and the contentious relationship between these parties has not changed.

Arundel requests permission to move overburden into a new area, now wooded and which serves as a natural and historic buffer between the surrounding roads and the neighborhood communities. This overburden will consist of between 7 and 8 million² cubic yards, will be placed in an area having a footprint of approximately 800 feet by 2,000 feet in size, with the resulting storage pile to be as high as 150 feet above grade level. The very act of moving the overburden to the proposed storage area will take up to 15 years, involve many pieces of equipment, and will require over 100,000 haul truck loads of 85 tons each.³ All the while, Arundel will continue to quarry and market material.

When completed, the overburden storage area will contain a weight and volume of material

² Arundel was not able to give a precise estimate of the total number of cubic yards to be moved to the proposed stockpile.

³ If required to be moved off-site in normal-sized dump trucks, approximately 550,000 loads would be required.

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which will exceed that of the Great Pyramid of Giza, one of the original, and the only remaining, seven ancient wonders. Of course, the neighbors⁴ and other protestants have no sense of wonder. Instead, their feelings are of dread and anxiety, looking upon the proposal as one which will significantly and adversely affect their health, property values and quality of life.

These are, of course, traditional concerns in almost any Harford County land use case, particularly given the density and speed of recent development. Nevertheless, these concerns are intensely held in this case given the scale of the proposal, the change in neighborhood uses, and the increased urbanization of the area in which the quarry is located. This dispute brings into play the difficult problems created by the increasing urbanization of our region, and the conflict which develops when long established and intensive uses are combined with and come into contact with increased residential and urbanized uses.

STANDARD OF REVIEW

In reviewing Arundel's request and the opposition of the Protestants it is important to bear in mind the nature of the relief requested. Arundel is seeking a special exception to allow overburden storage to be relocated as part of its mineral extraction and processing operation and, if necessary, a modification of earlier Board of Appeals approval.

Arundel does not seek permission to expand its actual mineral extraction and processing operation. Permission has previously been granted for this use, and Arundel continues to mine within the limits of that approval. The overburden storage component of its operation is specifically addressed at Code⁵ § 267-53E(1), and is considered a part of the mineral extraction special exception. A modification of an earlier special exception is allowed by Code § 267-52B. Overburden storage is part of an approved mineral extraction operation. Arundel seeks to expand the area subject to prior approvals for the exclusive purpose of relocating its overburden storage.

The granting of a special exception and modification of a special exception is subject to the same statutory standard.

"Special exceptions may be permitted when determined to be compatible with the uses permitted as of right in the appropriate district by this Part I. Special exceptions are subject to the regulations of this article and other applicable provisions of this Part I." (§ 267-51 of the Code)

⁴ Not one neighbor or resident of either the City or the surrounding area testified in favor of the application.

⁵ "Code" references are to the Harford County Development Regulations.

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The initial determination that the special exception is compatible with permitted uses has, in fact, already been made by the Harford County Council when it legislatively decided that this Natural Resource Use is to be treated as a special exception. While it is, of course, necessary that the specific statutory criteria of the use be complied with, it is expected that the use will be permitted once these criteria are met. See Eastern Outdoor Advertising v. Mayor and City Council of Baltimore, 128 Md. App. 294 (1999).

The specific requirements of § 267-53E(1), Natural Resource Uses, accordingly must be met by Arundel. While adverse impacts must also be reviewed, it is not a question of whether or not the proposed use would have some adverse impact on the surrounding area, as that is the nature of special exceptions. See Dale Lucas v. People's Council of Baltimore County, 147 Md. App. 209 (2002). Instead, the test is whether the adverse impacts of the granting of the special exception would be greater or more detrimental at the subject location than would be the result if located elsewhere within the same zone. See Schultz v. Pritts, 291 Md. 1 (1981).

Arundel's request must finally be reviewed in light of Code § 267-9I, Limitations, Guides and Standards, which provides a framework for addressing a multitude of broader real and potential impacts from any proposed land use request brought under the Code. The Board may impose conditions or limitations on any approval with respect to the considerations delineated in that Section. If, as a result of this process, including the possible imposition of conditions, there is no finding of adverse impact on the public health, safety and general welfare, or dangerous traffic conditions or jeopardy to the lives of property or people in the area, then the Limitations, Guides and Standards section of the Code may not be used to deny the application.

Note is made of the Protestants' argument that "cumulative impacts" from the proposed use can be considered as a reason for denial. Brandywine Enterprises, Inc. v. County Council for Prince George's County, 117 Md. App. 525 (1997), is relied upon by Protestants in support of this argument. Brandywine had as its basis a determination by the Court of Special Appeals that the District Council's decision to deny on the basis of cumulative impact was based upon substantial evidence. Specifically, a rubble-fill already existed in the area. A new rubble-fill was proposed. The old and new rubble-fills would virtually surround four (4) single family residences. Accordingly, based on this and other conditions, there was found to be substantial evidence to justify a denial based upon a finding of "cumulative adverse impact". The reviewing Court also relied on other reasons to support the affirmation of the District Council's decision.

Furthermore, the Protestants rely upon Moseman v. County Council of Prince George's County, 99 Md. App. 258 (1993), which was a similar case upholding a denial of a special exception. In Moseman, an existing rubble-fill was located adjacent to the proposed location. This was found to be sufficient to support a finding that the proposed use would impact the surrounding properties in a way different and unique than would result if the rubble-fill were located elsewhere within the zone. Again, the Court found there to be substantial basis for denial of the requested special exception.

While these cases are certainly illustrative and helpful, they do not by any means mandate a

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decision in this case.

The ultimate rulings in both Brandywine and Moseman were based upon the special exception standard discussion above. The ultimate question is, will the proposed use have more of an impact at the proposed location than if located elsewhere within the zone? None of the cases relied upon by the Protestants (or by the Applicant) change this clear guideline, nor do they impose a new or additional standard.

It is in light of these general standards that the testimony and evidence must be considered.

TESTIMONY AND EVIDENCE

First for the Applicant testified Kevin Small, employed by Frederick Ward Associates as a landscape architect and land planner. Mr. Small identified his duties as including oversight of environmental planning and landscape architecture within the firm. Mr. Small said that he has had occasion to prepare line-of-sight drawings, and is familiar with the process of doing so. Mr. Small was offered and accepted as an expert in land planning and landscape architecture.

Mr. Small stated he was responsible for preparation of documents and drawings related to Arundel's site plan, including preparation of base plans and line-of-sight drawings. He has researched and prepared landscaping plans. Mr. Small has been to the Arundel property 10 to 15 times.

Mr. Small identified the site plan of the quarry property (Applicant's Exhibit No. 6). The boundary of the existing surface mining permit line is shown on the site plan as a green dashed line. According to Mr. Small, limits of the surface mining permit are 800 feet off Lapidum Road, Baker Road and along the Natural Resources District line. The Natural Resource District boundary along the on-site stream parallels Level Road. The proposed overburden area is shown by a brown dashed line. The site plan further exhibits, by varying colors, the areas affected by Board of Appeals Case Nos. 529 and 4103.

Mr. Small identified the quarry property as having frontage on Lapidum Road, Level Road, and Interstate 95. On the remaining side of the property is located the existing quarry and abuts the Susquehanna River. The existing, surrounding neighborhoods are also shown on the site plan.

Approximately one year ago Mr. Small and his firm began preliminary work to determine whether the proposed storage could be seen from the surrounding areas. His original assumption was that the storage pile would have a maximum elevation of 540 feet above sea level, with the top of the pile forming a plateau. This number was mathematically derived from a calculation of the overburden which was to be transferred from the existing storage areas.

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In order to test the visibility of a storage pile at an elevation of 540 feet, Mr. Small floated a balloon at the intersection of Canvasback Lane and Level Road. The balloon was at the point where the pile would be the highest and closest to that intersection. The balloon was flown to a height of 540 feet. According to Mr. Small the balloon was clearly visible from the intersection. As a result, he lowered the balloon until it was not visible from Canvasback and Level Road. The final elevation was 480 feet.

Mr. Small then attempted to determine how far into the woods one could see. In an admittedly unscientific manner, Mr. Small had someone walk into the woods, with Mr. Small taking a photograph every 50 feet that person walked into the woods. The person remained visible to between 200 and 210 feet into the woods. Mr. Small conducted the same test on Lapidum Road, with the individual not being visible after 50 to 60 feet. Mr. Small indicated that the height of the woods that exists in the area of the proposed stockpile range from 50 feet to 90 feet with the average height being 70 feet. Mr. Small and his staff took photographs which he offered in support of these various findings (Applicant's Exhibit No. 7).

Mr. Small believes that the predominant tree species within the forest, which are red maple, poplar, hickory and beech will eventually grow to between 70 and 120 feet tall. In projecting their future growth Mr. Small assumed a conservative growth rate of 6 inches per year. Based on this growth rate Mr. Small projected an average tree height of 75 feet for his studies.

Mr. Small then introduced a series of eight lines of sight drawings to the proposed stockpile from various locations around the proposed site. Various photographs were also identified by Mr. Small which corresponded to the line of sight shown on each drawing.

Mr. Small then specifically identified the location of each line of sight. Line of sight drawing number 1 is from the corner of Level Road and Canvasback Road to the proposed stockpile and elevation of 480 feet, with the soil stockpile sloped back until it hits elevation 520 feet. (All lines of sight assumed an average tree height of 75 feet.)

Line of sight drawing number 2 shows that there will be no view of the soil stockpile from the corner of Morris Boulevard and Lapidum Road.

Line of sight drawing number 3 is taken from approximately 600 feet north of the intersection of Foley Road along Lapidum Road. According to Mr. Small, from this location the land form itself, not trees, block a view of the stockpile.

Line of sight number 4 shows a view from about 750 feet west of Lapidum Road. This line of sight shows no trees as Arundel has no control over trees, but it shows that the view of the stockpile is blocked from this location.

Line of sight number 5 was taken from a high point along Lapidum Road. This demonstrates that intervening trees will block the view of the soil stockpile.

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Line of sight number 6 shows a view of the stockpile from Sion Hill. According to Mr. Small, this diagram shows that the intervening trees which are located on the Quarry Property would block the view of the stockpile from Sion Hill.

Line of sight number 7 is another view from Mount Felix, being approximately 1,200 feet into the adjacent property south of Level Road. The trees in front of the residence on Mount Felix block the view of the stockpile.

Line of sight number 8 was taken from approximately 1,200 feet onto Tydings Bridge. Mr. Small stated that the view of the stockpile was obstructed from that location.

Mr. Small indicated that, generally, visibility of the stockpile is affected by the various seasons of the year. Forest cover and the elevation of forest cover also affects visibility, as does the elevation of the observer. The prepared lines of sight assume a hypothetical person looking at the stockpile from an elevation of 5-1/2 feet above ground level. According to Mr. Small, the stockpile would be stabilized with vegetative ground cover – orchard grass – as each phase of construction is completed. Normally that type of vegetation would begin to germinate within 14 days of application. Trees would also be planted beginning at the end of the first phase. The trees, which will include white pine, will grow as high as 150 feet. These plantings will result in a noticeable change in the appearance of the stockpile within five years of planting, making the stockpile more difficult to see.

On cross examination, Mr. Small indicated that the entire portion of the Arundel property in which the stockpile is to be located is presently forested. Mr. Small identified a residential subdivision to the west side of Lapidum Road, containing 100 to 150 single-family dwellings, known as Susquehanna River Hills. He identified another subdivision known as Meadowvale to the north of Route 155, south of the quarry operation. This subdivision also contains approximately 100 homes. He identified as residential subdivision known as Grace Harbor to the south side of Level Road, containing a mix of housing types, including three-story condominium buildings.

Mr. Small also noted that Mount Felix and Sion Hill are historic inventoried sites.

The overburden stockpile does not impact any of the four non-tidal wetland areas on site. Mr. Small identified three residential properties owned by the Applicant which are located on the east side of Lapidum Road. The residences on these parcels are located between 450 – 500 feet from the proposed stockpile. As these properties are owned by Arundel they are allowed within the 800 foot setback. According to Mr. Small none of the drawings, including the site plan, show a walking trail across the quarry property. Mr. Small was not aware of the location of any easement to DNR and/or the Lower Susquehanna Greenways.

Mr. Small identified the planned area of disturbance between the remaining forested area and the proposed stockpile as being approximately 20 to 30 feet wide. This area of disturbance is located outside the 800 foot setback. Mr. Small further explained that the overburden stockpile will be hydro-

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seeded as it is constructed, but it will not be forested until the end of the first phase. The exact location of the haul roads have not yet been determined. The stockpile will take approximately 15 years to complete.

Mr. Small indicated that the highest elevation of the proposed stockpile during Phase “A” will be 450 feet,⁶ which corresponds to an elevation of from 26 feet to 102 feet above ground level.

Mr. Small identified Phase “B” as reaching an elevation of 500 feet, which would vary in height from 86 feet to 130 feet above ground level. Phase “C” would reach an elevation of 430 feet and will range from 78 feet to 0 feet above existing ground level.⁷

Phase “D” reaches an elevation of 520 feet, being within a range of 160 feet to 136 feet above ground level. Mr. Small explained that those elevations were higher than any points on the Arundel property which lie west of the overburden pile. Mr. Small had been told that the new stockpile will contain the material which is now in the two existing stockpiles, plus the overburden which will be removed as the quarry is expanded. The proposed stockpile will contain approximately 7.8 million cubic yards of material when completed.

Mr. Small agreed that the elevation of the intersection of Canvasback Road and Route 155, on the residential (south) side of Route 155, was approximately 5 – 6 feet higher than the roadway from which the site line was developed. Furthermore, the top floor of the condominium building located at that point is approximately 20 feet tall. Mr. Small did not do a line of sight projection from an elevation equal to the top floor of the condominium structure. Mr. Small also indicated that the residences on the west side of Lapidum Road lie about 4 to 6 feet above the road level.

For the Applicant next testified Michael Hall. Mr. Hall is employed by Frederick Ward Associates as a CADD Manager (computer aided drafting and design) and was offered and accepted as an expert in computer aided drafting and design.

⁶ Phase “A” was sometimes referred to as Phase 1.

⁷ The terms “elevation above ground level” and “elevation”, usually meaning above sea level, were used frequently throughout the Hearing. Of course they have significantly different meanings. Height above “ground level” is more easily visualized and easier to relate to impact.

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Mr. Hall testified that he and his firm had been retained to create a computer simulation showing the appearance of Applicant's relocated soil stockpile from an aerial perspective. Mr. Hall described how he and his staff had prepared the CADD drawings showing the various phases of the proposed stockpile. Mr. Hall stated that the final computer simulations accurately depict the appearance of the Applicant's stockpile through its four phases of construction. Of the four phases, the simulations for Phases B and D vary slightly from that given to the Harford County Department of Planning and Zoning. On Phase D, the surface of the pile does not go as far forward, and the small corner on the northeast side has been removed. (Applicant's Exhibit 14).

Mr. Hall also identified various attachments to the Department of Planning & Zoning's Staff Report which his office had prepared. These drawings show the various phases of the stockpile in its final condition, stabilized, with grass growth. These exhibits were offered and accepted as Applicant's Exhibits 15, 16 and 17.

On cross-examination, Mr. Hall indicated that the height of the trees which he used for his simulations varied from 55 to 90 feet in the forest area surrounding the stockpile. He indicated that the topographical information which he received was based on flown topography. The two existing stockpiles would be removed during Phase C. Accordingly, the Phase C depiction shows those areas as flat. Mr. Hall agreed that the distance between the Meadowvale subdivision property line and the line of blasting limit shown on the simulations is approximately 1,500 feet. He further indicated that wetlands on site are not shown on the CADD simulations, as they would be covered by trees.

Mr. Hall indicated, referring to his simulation, that the existing stockpile closest to Meadowvale (sometimes referred to as "Mount Arundel"), is shown as having an elevation of 452 feet, which would be approximately 152 feet above ground level. He indicated that the height of the northerly existing stockpile (sometimes referred to as "Mount Aspinall"), has a maximum elevation of approximately 340 feet, and would be about 100 feet above ground level. Mr. Hall stated that the perspective of one looking at the simulation is from approximately 1,500 feet above ground level.

Next testified Richard Mattingly, who is employed by the Applicant as Vice President of Stone Operations. As such, Mr. Mattingly oversees the operation of quarries, including the Havre de Grace Quarry. He testified as a spokesman for the Applicant. Mr. Mattingly generally described the subject property, and in doing so referred to Applicant's Exhibit 6.

Mr. Mattingly described the production of the quarry as granite rock used in roadway construction, concrete, asphalt, shoreline construction and rip rap. Mr. Mattingly described the present volume of the two existing stockpiles (Mount Arundel and Mount Aspinall) as being between 7 and 8 million cubic yards of material. Stockpile No. 1 (Mount Arundel), has been in existence since 1993, with the quarry having been active since 1978 on a daily basis. Stockpile No. 2 (Mount Aspinall), has been in existence for 3 to 4 years. Mount Arundel is fully stabilized. Mount Aspinall is stabilized on its lower benches. The Applicant is not requesting permission to modify any aspect of the current quarry operations. Arundel wishes to move the stockpiles in order to access reserves under the two existing piles.

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Mr. Mattingly, with reference to the various phases of construction of the new stockpile, stated that the construction of the first phase should take 2 to 3 years. Construction of Phase B would follow and will take approximately 3 to 5 or 6 years. Phase C will take a similar time, depending upon market demand. Operations would be complete during Phase D, during which time the stockpile will be finally stabilized.

Mr. Mattingly described the projected haul road, its construction and maintenance. The proposed stockpile itself will be constructed with a 2 to 1 slope, with benches being approximately 40 foot tall and topped by a reverse bench. The outside berm of the proposed stockpile would act to help shield noise from the construction activity. The outside edges would be stabilized as soon as possible in order to provide a working surface within and to help attenuate noise.

Soil stabilization methods will be employed as the stockpile grows, with nutrients added to the soil. A water truck will be used to reduce dust. No other dust control measures are proposed.

The hours of operation for relocation of the stockpiles will be 7:00 a.m. to 5:00 p.m., Monday through Friday. Mr. Mattingly could not recall whether Saturday and/or Sunday operations are proposed.

Mr. Mattingly was asked Arundel's position on the various conditions which had been proposed by the Harford County Department of Planning and Zoning. Mr. Mattingly indicated that Arundel agreed with all conditions, with the exception of the proposed condition that the height of the overburden stockpile not exceed elevation 444 feet within 1,000 feet of the right-of-way of MD Route 155, with an overall height not to exceed elevation 480 feet. Mr. Mattingly said this condition was not acceptable as it did not allow the movement of the quantity of materials which the Applicant needs to relocate.

Mr. Mattingly also stated that Condition 1 is not acceptable. This proposed condition requires that the stockpile be located a minimum of 1,000 feet from Lapidum Road and 500 feet from Route 155. Again, in Mr. Mattingly's opinion, these setbacks limit the quantity of materials that can be stored in the pile. He did not believe that the increased setbacks would make any difference to the noise or the disturbance to the areas. He further did not believe that the height of the pile would have any impact on the neighborhood.

Mr. Mattingly stated that Stockpile No. 1 (Mount Arundel) contains 3-1/2 million cubic yards, and Stockpile No. 2 (Mount Aspinall) contains close to 3 million cubic yards. He was not certain of the exact measurement. One cubic yard is equal to approximately 1.5 tons. The Applicant has a remediation plan, although Mr. Mattingly is not specifically familiar with its conditions.

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Regarding the issue of dust control, Mr. Mattingly said that Arundel has one water truck and one back-up unit. Typically, only one truck is used at any one time. That truck carries 13,000 gallons of water and sprays a path of water approximately 80 feet wide. It also has a cannon and can shoot water approximately 100 feet. The water truck is operating all of the time, weather permitting. The truck is filled an average of 10 to 15 times per day while it is working. The water for the truck, which is used for dust control, is pumped from the drainage catchment is the existing quarry.

The witness indicated that the area which is to contain the proposed stockpile has always been a forest, and has not been utilized for any other purpose. The site itself will be cleared in phases to accommodate the stockpile.

Mr. Mattingly indicated that two air quality monitors have been installed and are operating. The first monitor is on the roof of Meadowvale Elementary School, and the other is on Lapidum Road. Monitoring has been done at various times, off and on. Mr. Mattingly is unaware of any complaints regarding dust during the construction of the existing stockpiles. He believes that the proposed stockpile will be large enough to accommodate the two existing stockpiles together with the overburden that will be generated from clearing the property to be mined. Approximately 8 million cubic yards of material will be in the proposed stockpile.

He indicated that quarry blasting occurs approximately 2 to 3 times per week, with the frequency going up or down depending on market demands. He believes the rate of blasting will be fairly constant.

Mr. Mattingly stated that the haul road will access the storage pile, and the benches will be completed around the perimeter of the stockpile once the road is taken out. An area approximately 20 feet wide surrounding the base of the stockpile will be established for necessary vehicle passage.

Mr. Mattingly does not believe the location of an easement for the Lower Susquehanna Greenway has been established. A final layout of the trail has not yet been completed. He has seen no plat which evidences a trail.

Mr. Mattingly was aware of a road which is planned to run almost parallel to the 1,500 foot line outside of Meadowvale. It would go from existing Baker Road in an easterly direction, parallel to the 1,500 foot buffer line.

Mr. Mattingly stated that dust will be controlled with the water truck in areas that are being worked on, or work will cease.

Next for the Applicant testified Torrence Pierce. Mr. Pierce identified himself as a civil engineer, employed by Frederick Ward Associates. Mr. Pierce's duties include the management of the civil engineering and land planning departments of his company. Mr. Pierce was offered and accepted as an expert civil engineer.

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Mr. Pierce was responsible for the development of the sediment and erosion control plans for the proposed stockpile. Mr. Pierce identified 4 documents, sheets C-17, C-18, C-19 and C-20, as drawings of the sediment and erosion control plan. The first drawing, Phase A, represents approximately the southern 50 percent of the proposed overburden stockpile. Mr. Pierce identified the dikes or berms that are to be constructed around the facility, and the four sediment traps shown on those plans. The total disturbed area under this phase of the stockpile is 27.35 acres. The southern portion of the stockpile, that depicted on the Phase A drawing, is the first to be built. The plans further show that the high point of the stockpile will be at elevation 428 feet, down to a low point of around 320 feet to 330 feet. Mr. Pierce described how sediment traps work to collect run-off from various portions of the stockpile shown in the Phase A drawing. The first part of the process of creating the stockpile will be installation of the sediment traps.

The sediment control plans had been reviewed and approved by both the Harford County Soil Conservation District and the Maryland Department of the Environment, Mining Division.

Mr. Pierce explained that these plans are necessary in order to avoid having erosion wash from the property and into the surrounding stream network, and are required for any disturbance over 5,000 square feet.

Mr. Pierce then discussed the drawings showing Phases B and C of the stockpile operation. Phase B shows an expansion of the pile roughly 500 feet toward the quarry pit, and raising the stockpile another 40 – 50 feet in elevation. Phase C then extends the stockpile to the north. The total disturbed area in the second phase (Phase B) is roughly 15 acres, and in the third phase (Phase C) is 15 acres.

Mr. Pierce next identified the plan for Phase D, which shows the stockpile being expanded approximately 500 feet toward the existing pit, and with the elevation being increased from 410 feet to 520 feet.

Erosion and sediment control plans are valid for 5 years, at which time the plans are required to be updated.

According to Mr. Pierce the decision as to where to actually place the proposed stockpile was made jointly, by Arundel and Frederick Ward Associates. Mr. Pierce indicated that if the maximum elevation of the stockpile were reduced to either 480 feet or 440 feet, he is not able to say how much material could be stored, as he has not reviewed those calculations. The calculations used by Frederick Ward Associates were based upon the existing stockpiles containing approximately 7.25 million cubic yards of material, with the proposed stockpile to hold approximately 7.8 million cubic yards. The proposed pile should include, based on information supplied to Mr. Pierce by Arundel, the material contained within the existing stockpiles plus the overburden to be removed by future mining operations.

The construction of the stockpile, in his opinion, would not affect any non-tidal wetlands on the subject property.

Mr. Pierce explained that removal of the existing stockpiles also requires sediment and erosion

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control measures which would be inspected by the Maryland Department of the Environment. Concerning the limit of disturbance at the base of the stockpile, while vehicles would not necessarily be physically able to drive within that area, the vehicles could drive within the sediment control facilities and through the forest around the base of the stockpile.

A total of 27.35 acres of forest will be removed during Phase A; 8 acres will be removed in Phase B; 16 acres will be removed during Phase C; and another 10 acres will be removed during the final phase, Phase D. The southern existing stockpile covers approximately 40 acres, and the northern existing stockpile covers approximately 40 acres.

Diesel powered off-road vehicles will be used in the construction of the proposed stockpile. Those vehicles will include 85-ton haul trucks, 100-ton haul trucks, 70-ton haul trucks, a track-dozer, pans, backhoes, and front-end loaders. These vehicles would also be traversing the top portion of the stockpile as it is constructed. The top of the stockpile would be up to 2,000 feet long and about 500 feet wide.

No structure is shown for noise-suppression purposes. The total projected build-out of the stockpile is about 15 years.

Mr. Pierce testified that the maximum height above ground level for Phase A is approximately 100 feet. The maximum height above ground level for Phase B is about 130 feet. The maximum height above ground level for Phase C is 75 feet. The maximum height above ground level for Phase D is 150 feet. Forest cover will be removed as each phase is developed.

The haul road for the proposed stockpile is not shown on any of the drawings submitted by Mr. Pierce, although logging roads and other access roads throughout the property are shown on sheet C-20 of Exhibit No. 23. Mr. Pierce believes there will be more than one vehicle operating on the stockpile at any one time, including bulldozers and haul trucks. There will be, perhaps, a total of 5 or 6 vehicles on top of the stockpile at any one time, and 4 to 6 haul trucks working at the same time.

Mr. Pierce's plans do not show a Lower Susquehanna Heritage Greenway Trail.

For the Applicant testified Harold B. Johnsson, III, Director of Environmental Affairs for Arundel Corporation. His responsibilities include overseeing environmental permitting and compliance for Arundel's operations in Maryland, Virginia and Delaware.

He described the Harford County Arundel operation as having a crushing and screening plant. Arundel conducts mining in the quarry, with a customer haul road that goes past the scale house called Baker Road. Arundel also has a service entrance that goes up to the old quarry road, past Meadowvale School and out Graceview Drive. Barges are loaded on the river side. Overburden stockpiles are on-site; Stockpile No. 1 is on the south, Stockpile No. 2 is on the north side.

Mr. Johnsson described the controls that are in place to help limit air emissions. Arundel has a 13,000 gallon water truck, used to wet the rock before it is loaded. It is also used to wet the haul

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roads that the trucks use. It can also be used to wet down the stockpile areas as necessary. The primary crusher sprays water throughout the process of crushing, screening and conveying. Arundel has a washing plant that washes much of the material before it is finally given to the customer. The haul road is wetted down and a truck wash rinses the tires of the customers' trucks. Arundel has a 13,000 gallon water truck that is used on the paved road. The truck wash was added in 1999. The plant now uses a system called "Nesco National Dust Control System". This high-pressure misting type spray is used in many quarries around the country.

The Arundel Quarry is a trap rock quarry. Trap rock is a dark stone. About 10 years ago, a bulk sample of the rock was analyzed in order to determine crystalline silica content.

Mr. Johnsson stated that Arundel had the stone from the quarry analyzed for crystalline silica content. A sample of crushed stone was sent to R. J. Lee Laboratory, a nationally recognized laboratory. The lab's findings were that the Arundel stone contained a bulk percentage of crystalline silica of about 23.6%. An analysis of smaller sizes of stone found lower crystalline silica contents. The crystalline silica content of 45 micron stone was 15.5%; of 10 micron size was .61%; and of 2-1/2 microns was .18%. A "micron" is a millionth of a meter.

Mr. Johnsson testified that the production rate of the quarry, from the period 1996 – 1997 to this year, has been between 3 and 4 million tons per year. Mr. Johnsson then explained Applicant's Exhibit No. 25, which provides information concerning the quarry output and crystalline silica content.⁸

Mr. Johnsson described the Maryland Department of Environment's operating permit for the Arundel Quarry. That operating permit limits the amount of product to 2,000 tons per hour, which Mr. Johnsson calculates as limiting the quarry's annual basis to 6 million tons per year. However, the quarry has never operated at this volume. The highest level reached per year for the quarry in the previous 8 – 9 years has been 4.2 million tons.

Mr. Johnsson explained that Exhibit No. 25 references to the emissions from the crushing and screening process. Other emissions generated by the quarry are called "fugitive emissions", which are generated by haul loads, etc. Mr. Johnsson further explained that the production of "rip rap", the large stone used for shoreline erosion control, is not included in the statistics shown in Exhibit No. 25.

While MDE does not require the reporting of fugitive emissions on an annual basis, Mr. Johnsson stated that Arundel has done so. Arundel annually reports the volume of crystalline silica in its emissions. Mr. Johnsson indicated that Arundel uses very conservative figures in computing crystalline silica emissions. The number used by Arundel is the percentage of the crystalline silica content of bulk stone.

⁸ Numerous references throughout the Hearing were to "PM 10". "PM" means particulate matter, with "10" meaning 10 microns or smaller in size.

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That percentage is much higher than crystalline silica content of smaller samples, and is a conservative estimate. He does not expect dust to have as high a content. Mr. Johnsson indicated that the State allowance was no more than 365 pounds of crystalline silica annually. Arundel's certifications indicate that Arundel actually generates between 28 and 43 pounds annually. This is shown on Exhibit No. 25.

Mr. Johnsson indicated that since 1999 the Arundel dust control systems have been improved by the installation of new washing equipment. Those methods have included the use of a larger water truck, which enables water to be put down much faster. A truck wash has also been added for the customer trucks at the scale area. Furthermore, trucks no longer use the road adjacent to Meadowvale Elementary School.

From 1997 to 1999 overburden in the amount of at least 500,000 cubic yards per year was being moved.

Concerning Arundel's fugitive emissions calculation, Mr. Johnsson stated that their conservative estimate in 1997 is 14 annual tons of total emissions, of which 4.8 tons were fugitive emissions from the stone storage piles at the quarry and customer trucks. Emissions were expressed in terms of P.M. 10.

On cross-examination, Mr. Johnsson indicated that each major piece of equipment on site - - crusher screens, conveyors, etc. - - has an emission factor which can be applied to the production that goes through the particular machine. The Environmental Protection Agency has established that emission factor. Emissions increase as production increases. MDE does not independently measure emissions.

Mr. Johnsson indicated that the plant manager was ultimately responsible for overseeing the contractors and subcontractors who operate the water trucks.

Mr. Johnsson stated that the silica content of the overburden has been tested and found to be 30 to 40 percent silica. The witness explained this as a normal content as "the non-silica particles dissolve away."

Mr. Johnsson stated that the amount of actual fugitive emissions vary, depending on quarry activity. Mr. Johnsson indicated that the 365 pound per year annual limit of emissions is a screening level. If more than that is emitted, additional analysis is mandated by MDE.

Mr. Johnsson explained the methodology for determining pounds of emissions. The volume of the annual emissions is used times 24 percent crystalline silica content of bulk rock, content, times the 1/100 factor used in the MDE methodology. The result is in pounds.

Mr. Johnsson further explained that the quarry processing equipment is about 20 to 50 feet above sea level, next to the shoreline. It is, accordingly, located about 300 feet below the level of the top of the quarry.

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Next testified Julian A. Levy, Jr. as an expert in all aspects of air quality assessment, including emissions estimation, ambient air monitoring, dispersion modeling, pollutant dispersion, and chemical analysis of air contamination and contaminants.

Mr. Levy testified that he had been asked by Arundel in 1997 to conduct the monitoring program in the vicinity of the quarry to assess the air quality with respect to particulate matter. Mr. Levy and his firm worked out the protocols for the monitoring. The program was designed to follow as much as possible EPA and MDE guidelines. Crystalline silica was part of the study.

In determining the location of the monitors Mr. Levy, with input from MDE, identified 3 locations that he felt would be adequate to determine the air quality around the quarry. Mr. Levy identified those locations (on Exhibit No. 30), as Lapidum No. 1, Meadowvale No. 2, and Elementary School Nos. 3 and 4. Four monitors were located at these three sites. The two monitors at the elementary school used different filter materials. The monitors were designed to collect particulate matter of 10 microns and less, chosen because that was and is one of the National Ambient Air Quality Standards. The first monitor began operation on April 4, 1997, with the other monitors brought up over a period of about one month. The monitors were operated through October 1997. In February 1998, the program was started up again and ran through March 1999. During that time the State and EPA also had monitors in the region which collected data.

Sampling protocol established by MDE and EPA required sampling every sixth day, which was followed by Mr. Levy. The monitors collected particulate matter of 10 microns and less. Mr. Levy's monitoring stations collected information on crystalline silica, along with other information. He sampled the concentration of crystalline silica in micrograms per cubic meter, and the size distribution, and the number of particles in various distributions. Mr. Levy, in describing a micron, stated that a human hair is about 10 microns in diameter. Mr. Levy's sampling methods were the same as used by EPA and MDE on a National and State level.

Mr. Levy described the results of his air monitoring as indicating "good" air quality. This was consistent with what was found in other representative areas. The findings were well below applicable standards, with the maximum being barely half the daily standard, which is the national ambient air quality standard promulgated by EPA and adopted by MDE. Background values for measured crystalline silica were lower than typical background values. A typical background reading reported by the EPA is a little over 3 micrograms per cubic meter, while Mr. Levy's findings at Arundel were about ½ of a microgram per cubic meter.

The findings at Arundel averaged about one-sixth of what is typically reported as background value. Mr. Levy described the air quality in this vicinity of Harford County as good with respect to Federal Standards on particulate matter, and may, perhaps, be getting better. The air quality in Harford County is in "attainment", meaning it has attained the applicable federal standard.

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Mr. Levy indicated that since his monitoring EPA had finalized another particulate air quality standard, called PM 2.5, sometimes referred to as "PM FINE". This particulate matter is 2.5 microns in diameter or smaller and is a part of what the PM 10 standard measures. PM 2.5 microns are particulate matter which can penetrate further into the lung and, therefore, are more of a concern from a public health standpoint.

Mr. Levy's monitoring found that the concentration of crystalline silica to the monitored PM 2.5 was a very minor contributor to the total PM 2.5 findings.

Mr. Levy stated that the State's air quality monitor over the past 3 years in Edgewood has shown compliance with the Federal PM 2.5 standard. The bulk of PM 2.5 particulate matter is a result of combustion pollution such as sulphur dioxide, and nitrogen dioxide, which convert to particulate matter of very fine particles. Combustion products are the principle source of these types of emissions. Mr. Levy also indicated that 1997 was a very dry year, which would tend to increase the concentration of particulate matter over a regional basis.

Mr. Levy studied the effect on the standards if the Arundel Quarry production went to its maximum level. Mr. Levy found that emissions in that event would still be much lower than the applicable standard.

Mr. Levy then discussed Exhibit No. 31, which he identified as a comparison of various air quality standards and screening levels. He further explained that this Exhibit was an attempt to put all the regulatory levels on one chart. The EPA levels for PM 10 and PM 2.5 are the National Ambient Air Quality Standards. The Maryland Department of the Environment screening levels are also shown, and are used when a source is modified or a new source comes on line in order to determine if additional analysis is required. MDE is not an air quality standard. It is, instead, a screening level. The latest MDE threshold limit value is one, although Mr. Levy used .5 micrograms of crystalline silica per cubic meter as a more conservative value.

Mr. Levy explained that the NIOSH, OSHA, MSHA, and ACGIH values are not ambient air quality standards. These are much higher levels than either MDE or EPA limits for crystalline silica. Only OSHA and MSHA standards are ambient air quality standards.

Mr. Levy explained he is assuming that the crystalline silica content in the bulk samples is 24 percent. If the content of the dust in the air is actually less than 24 percent, allowable exposure limits would be higher.

Mr. Levy then explained Exhibit No. 32, which is a summary of the daily averages for the PM 10 (10 micron) monitoring at the monitoring sites on the Arundel property, in addition to MDE's Elkton Monitor results. The chart shows a high reading of PM 10 on July 15, 1997, recorded at Meadowvale Elementary School. On that day, the wind was blowing predominately from the southwest.

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Mr. Levy then explained that he, using the Elkton Monitor as a control, came up with an average of what was being contributed locally by the Arundel Quarry operation as compared to background level, based on 6 million tons production per year. He subtracted the background level as found at Elkton. He assumed the remaining level came from the quarry, and was increased by the ratio of the production increase. Mr. Levy indicated that all resulting values, which were conservatively computed, would still have been well under the appropriate PM 10 standards.

Mr. Levy, using Exhibit No. 33, testified that assuming the production at Arundel was at the 6 million tons per year maximum allowable under its surface mining permit, values would not exceed the PM 10 annual air quality standard on an annual basis. Although less than half the PM level at maximum production, ambient levels of PM 10 would increase at the Lapidum monitor from about 23 to 30, with the standard being 50.

Mr. Levy then explained that 1997 was the highest year throughout the region in PM 10 levels. He attributes this to the dry weather that year. He then stated that there had been a steady decline in PM 10, which translates to an improvement in air quality, with the exception of 1997. His conclusion is that the air quality in this region is getting better.

Mr. Levy stated that the PM 2.5 concentrations are dominated by combustion products. However, Exhibit No. 36 shows that concentrations of PM 2.5 in the region are well below the standard.

Mr. Levy then described his dispersion modeling of the emissions from the quarry in terms of crystalline silica. (Summarized on Exhibit 38). Mr. Levy described his modeling process. He used a standard EPA screening model to model the emissions which were reported to the State by an annual emissions certification, increased to account for fugitive emissions. The production rate used was that reported to the State and was used to calculate a crystalline silica emission rate. Based on his model, and using 6 million tons per year in production, Mr. Levy finds that the off-site concentrations were not close to .5 micrograms per cubic meter and is accordingly "way below the screening level". The model showed actual concentrations to be less than .1 microgram per cubic meter.

Using Exhibit No. 40, Mr. Levy described his model of the actual emissions from the Arundel operation, including fugitive emissions, plus actual emissions reported to MDE for the period 1996 to 2003. He projected those emissions for the year 2004. He also projected emissions using a maximum level of 6 million tons per year. Those values were on the order of 10 micrograms per cubic meter. Based on a projection of 6 million tons per year his modeled results were much better than the national ambient air quality standard. Results were lower than 20 micrograms per cubic meter, while the standard is 150 micrograms per cubic meter.

Mr. Levy found no evidence that the emissions from the quarry would cause an exceedence of Maryland's air toxic screening value for silica, nor would the emissions allowed under the permit of 6 million tons per year cause any exceedences of any ambient air quality standard. All monitored values were below established standards and guidelines for particulate matter and for crystalline silica.

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Mr. Levy disagreed with the assertion that the air quality in Harford County is not good. He stated that ozone is the only pollutant of concern of which he is aware of.

Mr. Levy stated that his model did not consider the fugitive emissions which would be created by the movement of the overburden stockpile, although it was based on the highest production levels allowed by MDE.

Mr. Levy again explained the MDE screening levels. He indicated that a screen is a threshold. There is no problem if one is below the threshold. If an emission is above the threshold, then MDE requests more sophisticated analysis to determine if there is a health hazard. Mr. Levy indicated that the trucks being used in the quarry pit produce PM 2.5, as well as certain other operating equipment.

Mr. Levy repeated that, in his modeling, he utilized a .5 screening level for crystalline silica. He did not monitor for PM 2.5.

Mr. Levy testified that he used a conservative estimate in his modeling – he assumed that the dust being released was 25 percent crystalline silica. However, the actual measurement of the PM 10 crystalline silica concentration in the dust was 1.5 percent, on average. This was some 10 to 15 times lower than the figure which was used in his modeling.

Mr. Levy stated that if an assumption were made that the silica content of the material was actually 30 or 40 percent, emission levels would have increased by 50 percent. However, this compares to his modeled values which are at least 500 percent below the standard.

For the Applicant next testified Rebecca Moreland, employed by Chesapeake Occupational Health Services. Dr. Moreland was admitted as an expert in the field of public and occupational health and safety, including monitoring of exposures, health screening assessments, and evaluation of health screening data and exposure information.

Dr. Moreland was asked to consult with Arundel with reference to silica analysis beginning in 1995. Dr. Moreland reviewed MSHA (Mine Safety and Health Administration) data to determine the strategies which might be used to help keep workers as safe as possible. A voluntary air monitoring program and personal monitoring program was developed for the Arundel employees. That program began about 1995 and screening has been performed by Dr. Moreland on a two year basis since then. In the year 2000 screening was performed on about 85 employees. Another screening was performed in January 2003. The next screening had been scheduled for January 17 and 18, 2005, but was rescheduled because of weather.

Dr. Moreland found no indication in those surveys that any worker at the Arundel quarry had silicosis. While one worker reported having cancer, according to Dr. Moreland, there is no indication that this cancer was attributable to silica or dust exposure at the quarry.

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Dr. Moreland found two “exceedances” of MSHA exposure levels recorded by plant workers. The most recent finding was in 1996. When exceedances are found Dr. Moreland determines what can be done to help control exposure levels. Changes to operations were made and individuals were retested. After retesting, all individuals were found to be in compliance. There have been no subsequent measurements taken, of which Dr. Moreland was aware, that have been in excess of any MSHA limits and related to silica.

Dr. Moreland has no concerns that the health of individuals in the community is in any way endangered by the operation of the quarry by crystalline silica. Her review of community monitoring for silica as well as PM 10 data reveals no exposure to the community. She has documented no worker over-exposure to silica.

Dr. Moreland also identified a cumulative summary of personal exposure samples at the quarry from 1979 through March 2004. This is information that MSHA generated by having silica testing monitors on employees.

Dr. Moreland had participated, as Arundel liaison, in a multi-agency approach to determine if there was any validity to claims of excess cancer in the community. The conclusion of the multi-agency study, according to Dr. Moreland, found no evidence of elevated cancer rates in the community that could be related to silica-type exposures.

Another analysis was done over the years 1996 to 2000 at the request of the Harford County Health Department. Based on this analysis Dr. Moreland concludes there is no evidence of any elevation that was potentially related to the operation of the quarry. Dr. Moreland stated that there is a statistically significant finding of an increase in lung cancer compared to state-wide rates within the quarry’s zip code. However, Dr. Moreland found no indication that the quarry was responsible for that finding of increased lung cancer.

Dr. Moreland also referred to a statistical analysis of lung cancer, dated July 29, 2004, prepared by the Maryland Cancer Registry for the Department of Health and Mental Hygiene. The authors of that report concluded that they were unable to draw any conclusion about casualty with respect to silica exposure from the quarry in Havre de Grace. The report stated that it is usual to require greater than a two-fold increase in risk in order to attribute lung cancer to a cause other than cigarette smoking. The statistical analysis of the Arundel quarry zip code found less than a two fold increase in risk.

Dr. Moreland indicated, upon questioning by a neighbor, that her primary area of expertise is health surveillance. She stated that the Mine Safety and Health Administration is required to monitor each quarry twice a year. It may or may not choose to evaluate silica during any of those inspections. The inspections are usually unannounced.

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Dr. Moreland then explained the precautions which Arundel employees take with respect to dust exposure. She explained there are a number of different health education sessions conducted, through the MSHA program. Employees need to understand the potential for silicosis and what they can do to protect themselves. Employees who are required to wear respirators are given training in their use. Housekeeping issues are also taught, such as water suppression issues. General health instruction is also given.

Dr. Moreland is on-call and visits the quarry upon the request of the safety director, as needed. She does not work with subcontractors. She does not know if employees get written instructions concerning dust control measures. Dr. Moreland's health surveillance does not include chest x-rays. Chest x-rays are the primary means of identifying signs of silicosis.

The monitoring and health surveillance program is voluntarily provided by Arundel. Arundel is not required to provide this program.

Dr. Moreland has not studied the health of the Meadowvale citizens.

Dr. Moreland did not know if individuals would be more susceptible to levels of particulate matter as a result of Harford County's being out of attainment for ozone standard.

According to Dr. Moreland the protocol for the employee testing was to test employees throughout the day, and to compare the current testing results with that obtained in prior years. All of these records are available. It is Dr. Moreland's understanding that employees have a pulmonary function test when each begins employment. Employees also fill out a health questionnaire at the time of employment. Dr. Moreland believes there have been health studies that have been performed and recorded in the medical literature regarding residents who live in and around quarries. However, she could not give a reference. To her knowledge, no one from the Department of Health or from the Cancer Registry have conducted any sort of a health survey in the area of the quarry within the last year or two.

Dr. Moreland explained that employees who are required to use respiratory protection are usually the "trouble shooters", who respond to different jobs during the course of the day. Their environment is difficult to control through engineering controls and, therefore, they are taught to use respiratory protection. Dr. Moreland knows of approximately four females who are employed by Arundel out of a workforce of about 65.

Dr. Moreland indicated that none of the employees who are engaged in the movement of overburden are required to use respiratory protection. Dr. Moreland also stated that, based on her conversations with the Harford County Health Department, there did not appear to be any excess asthma in the Meadowvale Elementary School. Dr. Moreland also stated that OSHA standards were established based on the assumption that the worker will not use respiratory protection.

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Next for the Applicant testified William Graham. Dr. Graham, during his qualification, defined silicosis as a fibrotic disease of the lung which is caused by inhaling small particles of crystalline silica. The more particles one inhales, the more quickly the disease develops and the more severe it is.

There are three clinical types of silicosis. One is acute silicosis, which is brought on by massive inhalation of pure quartz, often seen in the past in tunnel digging. Second is a sub-acute type, which occurs over a period of several years. Thirdly is the chronic kind which can arise only after 10, 20 or 30 years of low-grade exposure and causes very little disability. The first two are usually fatal as victims suffer tuberculosis superimposed on the silicosis. Silicosis is usually associated with granite. Granite consists of approximately 30% quartz or crystalline silica. Sand is close to being pure silica, but granite is not pure.

Dr. Graham was offered and accepted as an expert in the epidemiology of the impacts of dust exposure on human health, and an expert as a Board Certified internal medicine doctor, specializing in pulmonary disease.

Dr. Graham indicated he is familiar with the Arundel quarry, having spent a day there in October 2004. He was particularly interested in the dust control methods being utilized. Dr. Graham also reviewed data on dust levels which had been collected in 1997. Dr. Graham also was familiar with and had read Julian Levy's testimony. He had also familiarized himself with air quality data and exposure levels to employees. He is familiar with the claims and concerns of the neighbors, he said.

Dr. Graham has observed the overburden pile, and described it as a big pile of dirt covered with growth. Dr. Graham is also familiar with EPA information available in this area of research and was familiar with the 1996 study which concerned Ambient Levels and Non-Cancer Health Effects of Inhaled Crystalline and Amorphous Silica.

Summarizing his review of the data collected at the three monitoring sites adjacent to the neighborhood, Dr. Graham concluded that he found no violation of the standards established and set up by the EPA for PM 10, with one exception, ("one excursion"). Except for the one excursion, levels he observed are essentially the same as would be found virtually throughout the country. Dr. Graham believes there is no cause for concern at the Arundel site. The data shows the levels to be very low – "far too low to cause any human disease."

Dr. Graham is in agreement with the evaluation by EPA in its 1996 study of Ambient Levels, which found that if ambient levels of quartz are at a level of from 3 to 8, and if that level of quartz is breathed for an entire lifetime, this would not produce a total cumulative dose of more than 1 milligram a year per cubic meter. At that level, there would likely be no human effects. He also stated his overall impression is that there are no health effects because of the dust levels in the neighborhood adjacent to the quarry.

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Dr. Graham stated that quartz has been in the background of the earth forever, as much of the earth's surface is comprised of quartz and it flakes off. Dr. Graham indicated that the current OSHA standard was derived from studies done in the Vermont granite industry in the 1920's and 1930's when there was an epidemic of silicotuberculosis.

Dr. Graham stated the level which was adopted in the Vermont granite industry as a result of many studies was 10 million particles per cubic yard of exposure. From 1940, the time that control level was put into effect, until 1972, there was not been a single case of silicosis found radiographically (by chest x-rays). Studies have found that since the standard was put into effect there have been no new cases of silicosis in the Vermont granite industry. Controls consisted of changing the production and stone finishing methods.

Dr. Graham stated that NIOSH was established about 1970. A base of several hundred dust samples taken in 1983 showed that the average quartz levels which workers had been exposed in the Vermont granite industry was 50 to 60 micrograms per cubic meter, which is well below the 100 microgram current standard, and which is a great deal higher than anything in the environment around the Arundel quarry.

Dr. Graham testified that 1,000 x-rays were taken in 1983 of workers in the Vermont granite industry, with only 6 showing minor silicosis in the very earliest stage. Every other one was normal. The average exposure of those workers at that time was 20 years, and their average age was in the mid 1940's. From these findings Dr. Graham concluded that these people had been exposed to a great deal of quartz during their working lives.

There are 1,000 micrograms in one milligram. Workers in the Vermont granite industry are exposed, without health effects, to 50 to 60 micrograms per cubic meter, which is a great deal higher than the levels in the environment surrounding the Arundel quarry. NIOSH levels are 50 micrograms per cubic meter.

As neighborhoods around Arundel experience ambient measurements of well below 3 micrograms – actually 1 to 1-1/2 micrograms, Dr. Graham concluded that there is no basis “at all” for any concern about health effects to the residents surrounding the Arundel quarry.

Dr. Graham understands that the ambient levels in and around the Arundel quarry to be on the low side, similar to the general exposure throughout the country. From his review of the data there is no evidence that dust from the quarry increases the ambient level around the quarry. He understands that the measurements taken at the quarry show ambient levels well below 3 micrograms per cubic meter. Actual levels are closer to 1 or half a microgram. These are extremely low levels, which should cause no concern about health effects. He also indicated silica has never been found to cause asthma.

Dr. Graham next explained that PM 2.5 particles are similar to soot, or soot in the form of a gas. These are major components of bad atmospheric pollution.

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On cross-examination, Dr. Graham testified that he had visited the Arundel quarry on one occasion only, and did not look at any health reports or any compliance reports at that time. Dr. Graham does not believe that silica can cause cancer. He bases his opinion on a mortality study which was just published and involves the study of 5,400 people, all granite workers in the Vermont granite industry. Half of the people studied are now deceased. Half of those people had been hired before 1940 when dust levels were very high, and half were exposed after 1940. Accordingly, equal numbers of people were in both exposure groups. The study found that the standardized mortality ratio is about the same for both groups. The single cause of cancer where clinical data could be found involved cigarette smoking. Dr. Graham believes that smoking is, by far, the largest contributor to lung cancer. At least 90% of all lung cancer is caused by smoking.

There exist studies which can be interpreted as showing a link between silica and cancer. Dr. Graham's personal opinion is that any link is weak, at best. He does not believe the data supports anything more. He admits that NIOSH is linking silicosis with cancer. OSHA does not.

Dr. Graham interpreted the ambient air monitoring data from Arundel as showing that during the time the existing overburden was being moved no increase was found in the usual ambient dust levels. This is based upon monitoring data collected by Dr. Levy.

Silica lasts forever in the environment. Dr. Graham also stated that water is a very good control agent and helps reduce the chemical processes involved. Dr. Graham indicated that essentially no research has been conducted on the effect of silica on children, elderly or other vulnerable groups.

Dr. Graham said that OSHA is considering revising its standard, but had not yet done so. This was because of the disparity between NIOSH's REL and OSHA's standard. Dr. Graham also believes that early signs of silicosis are not necessarily revealed on pulmonary function tests.

Dr. Graham knows of no studies which show ambient air concentrations of 3 milligrams per cubic meter to be a cause of cancer or any other disease.

Dr. Graham stated that the NIOSH REL standard is lower than the OSHA standard. NIOSH REL is 50 micrograms per cubic meter; OSHA is 100 micrograms. Dr. Graham believes that the 100 microgram level is a safe level. He believes if the current OSHA standards were observed, that essentially silicosis would disappear. If the level were at 50 micrograms per cubic meter, he also believes there would essentially be no silicosis.

For the Applicant was next called Alvin Schneider, employed by Frederick Ward Associates as an environmental projects manager. Mr. Schneider was offered and accepted as an expert environmental consultant in the area of wetlands and forestry.

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Mr. Schneider stated he was familiar with and had visited the subject property. He explained that non-tidal wetlands contain three characteristics: hydrology, soils and plants. The waters of the United States are basically an open body of water that can contain one of those three characteristics of non-tidal wetlands.

Hydrology means that something either carries water or shows signs of water ponding or standing. With regard to soils one looks for hydric soils, which show that water is present during the growing season. Hydric soils are evident by their gray color. Wetland plants are certain types of plants contained within wetland areas and are found in wetlands over 50% of the time.

Wetlands serve as a filtering device for storm water run-off. They are valuable for wildlife and animals. Their protection is important. Governmental agencies which regulate the disturbance of wetlands include the Maryland Department of the Environment and the U.S. Army Corp of Engineers.

Arundel has obtained a permit to disturb wetlands. This permit was obtained from the Maryland Department of the Environment and the Army Corp of Engineers. Exhibit No. 59 was identified as a non-tidal wetland permit issued by the Maryland Department of the Environment, and dated 1996 with an expiration of 2006. It permits the expansion of the existing surface mining operation, including mining operation and overburden storage resulting in permanent loss of 87,800 square feet of non-tidal wetlands and an associated 25 foot non-tidal wetland buffer.

A second permit was issued by the U.S. Army Corp of Engineers (accepted as Exhibit No. 60). These permits provide for the expansion of the 102 acre stone quarry to the contiguous area of Arundel Corporation's property adjacent to Route 155. This expansion would impact 7,400 linear feet, and 1.01 acres of intermittent stream channel, and approximately 2.02 acres associated palustrine forest wetlands. This area encompasses a portion of the existing stockpile and a portion of the proposed stockpile area.

In order to obtain a surface mining permit for the proposed stockpile Arundel was required to modify the existing approvals. That modification was obtained (Exhibit No 61). The modified permit allows Arundel to disturb additional wetlands.

Wetlands on the Arundel property are along MD Route 155, and is a system which runs to the east. A water and wetlands system that runs to the east is located just above the weigh station. Another is located south of the weigh station. A water system is located to the southwest of the existing soil stockpile with another wetland area between that water system and the stockpile area. Wetlands systems run north toward I-95. None of these wetlands are located in the relocated stockpile area.

Mr. Schneider then explained how he went about determining the location of the wetlands areas. He reviewed aerial photographs from Harford County Department of Planning and Zoning and reviewed the non-tidal wetland Inventory Map. Additionally, he looked at Harford County Soil Survey maps to determine the types of soils found in the area. He also reviewed the previous wetland permits. He made a personal visit to the site. During December, 2003 Mr. Schneider performed soil borings with a soil auger to determine whether hydric soils were present.

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He also examined the hydrology of the area and plants. Areas which he found to be qualified as wetlands areas were flagged. In this way he delineated on the subject property all areas of wetlands. He then determined by using a global positioning device the actual locations of those areas on the plans. Final plans showed 6 or 7 wetland systems. Those systems are now identified through the Maryland Department of the Environment and the Corp of Engineers. These finding helped to determine the location of the proposed stockpile. Arundel wanted to stay outside these wetland areas because they did not want to obtain permits for their disturbance.

The Maryland Department of the Environment then reviewed these findings, visited the site and verified his findings. The U.S. Army Corp of Engineers also concurred in the findings. To Mr. Schneider's knowledge no further approvals or permits are required.

Based upon his studies, Mr. Schneider is of the opinion that no wetland areas will be disturbed as a result of the relocation of the stockpile.

Mr. Schneider also had prepared a forest stand delineation for the proposed stockpile area. A forest stand delineation is an investigation of the vegetation and existing features which are located within a certain area proposed for disturbance. In the state of Maryland any sort of development needs a forest stand delineation completed for that project. A forest stand delineation is not required for approval of the surface mining permit, but one was prepared by Arundel. To prepare the forest stand delineation, Mr. Schneider visited and walked the site. He determined there were several different vegetation communities located within the proposed soil stockpile area, including three different forest stands. These stands are designated as "I", "II", and "III" on Exhibit No. 64.

Mr. Schneider explained that Stand I is heavily dominated by Tulip Poplar. Other species found were American Beech, Hickory, Sweet Birch, Red Maple, and Black Cherry. The sub-canopy below was very sparse.

Stand II is a mono-culture of Tulip Poplar. Other species were present, but it was heavily dominated by Tulip Poplar.

Stand III was dominated by American Beech with a co-dominant of Tulip Poplar. Also present were Red Maple, Red Oak, White Oak, Black Cherry, Sweet Birch, and Green Ash, and various other species.

According to Mr. Schneider the proposed stockpile area contains 69.33 acres of forest which will be removed during construction. The witness indicated that the total forest area between Lapidum Road and Baker Road is about 150 acres. The witness's report indicated that the subject area is considered as having "good priority forest areas and specimen trees". The witness testified that the new wetland delineation is a much better and tighter delineation than the 1996 delineation. The 1996 delineation was the basis of the old permit. The 1996 Army Corp of Engineers permit is no longer active, as a more recent letter from the Corp of Engineers supersedes that.

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The modified permit states the impact will be of 200 square feet of emergent non-tidal wetlands, 4,067 square feet of non-tidal wetlands buffer, and 247 linear feet of waters of the United States. A wetland buffer exists around the wetland system.

Mr. Schneider indicated that the wetland delineation given to the Army Corp of Engineers is shown on Exhibit No. 8, and was referred to by Mr. Schneider during his testimony. The Maryland Department of the Environment and the Corp of Engineers reviewed plans during the year 2004. These plans are also shown on Exhibit Nos. 64 and 65.

Mr. Schneider explained that the Army Corp of Engineers had jurisdiction in 1996, as Arundel wanted to mine several areas that had waters and wetlands limits. Arundel does not now wish to mine those areas, only locate its stockpile there. The previous delineation was not an accurate field delineation. The Army Corp of Engineers does not have jurisdiction because the areas in which Arundel Corporation wishes to place a stockpile will not impact any non-tidal wetlands or waters of the United States.

Clarifying earlier remarks, Mr. Schneider indicated that the previous permit which was issued by the Army Corp of Engineers allowed Arundel to fill-in an area which is now under the existing stockpile. Mr. Schneider also indicated that he platted the areas of the truck movements to and from the proposed stockpile site, and those areas do not impact wetland areas.

Mr. Schneider indicated that a jurisdictional determination by the Corp of Engineers is valid for 5 years.

Next for the Applicant testified Michael Hollins. Mr. Hollins identified himself as an ecologist, who does a full-range of environmental inventory assessments, management plans and restoration strategies. Mr. Hollins was offered and accepted as an ecologist.

Mr. Hollins indicated that he was hired by Arundel to conduct an analysis of environmental impacts which may result from the relocation of the stockpile. He has visited the subject property and is familiar with the erosion control plans.

Mr. Hollins stated he had four major areas of focus in reviewing the proposed stockpile area. One was an endangered plant reported to be on-site, *equisetum fluviatile*, commonly referred to 'horsetail'; second was map turtles, a somewhat rare turtle; third were wildlife issues in general; fourth was old growth forest issues.

Horsetail is a palustrine plant, one that relies on groundwater. After searching the proposed site Mr. Hollins found no habitat for horsetail in the stockpile footprint, and no specimens were found.

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Addressing the map turtle issue, Mr. Hollins indicated they had been found in the Susquehanna River, adjacent to the site, during a survey performed in 1999. Map turtles are fairly rare in the Chesapeake drainage system. They are not on the Federal endangered species list, they are on the state “Rare and Endangered Species” list. It is an uncommon turtle, in need of conservation. Mr. Hollins stated that breeding habitat for map turtles does not exist on the Arundel site.

Mr. Hollins described an “old growth forest” as “overmature”. In general an old growth forest has a predominance of trees in three different age classes - overmature, 3 feet and greater, and somewhat disoriented stands. It is also evidenced by a “pit and mound” topography. As trees fall, younger trees take over this creates a diverse forest community with old, dead trees on the forest floor, somewhat older trees standing in the forest, and then the very young trees and shrubs and briars succeeding in those canopy gaps.

Based upon his analysis and review of the site Mr. Hollins concluded that there is no old growth forest on the proposed site.

Addressing wildlife, Mr. Hollins believes that the site hosts a fairly limited diversity. There exists a middle-aged stand of trees, 40 – 60 years old, with fairly low species diversity and a sparse understory. He would characterize the forest as very good transient habitat as it is an open, large contiguous tract which follows and parallels the river. Food for deer is located on the property. Breeding habitat for deer does not exist on the site, according to Mr. Hollins. Mr. Hollins stated the habitat on site could be enhanced if openings into it were created and if the vegetative types were diversified. The habitat could be made better by the proposed relocation of the stockpile. He sees no adverse environmental impact if the stockpile were relocated, as proposed.

On cross-examination, Mr. Hollins stated that horsetail has in the past been found in Cecil and Harford Counties. Mr. Hollins stated that distribution of horsetail is known only in Cecil, Harford and New Castle counties at the edge of the fall line. Mr. Hollins stated that Havre de Grace and its environs were approximately at the fall line.

Mr. Hollins indicated that he did not survey the site for map turtles. He reviewed a survey done by Tim Hoen, on May 20, June 11 and June 25, 1999. The temperature at time was 80 – 90 degrees. Hoen identified turtles in the river in close proximity to the site. He also identified a colony of map turtles at Garrett Island. Garrett Island is located one-quarter to one-half mile from the Arundel site in the Susquehanna River. Mr. Hollins did not walk the old railroad line or the shore line on February 7 when he did his site survey.

Mr. Hollins was shown and identified a letter from Director Janet McKegg, of the National Heritage Program of Maryland Department of Natural Resources. Mr. Hollins does not know if Arundel followed the recommendation of that letter, which was that the proposed overburden site be shifted to an area with drainage away from the Susquehanna River in order to provide better protection for the map turtle.

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Mr. Hollins identified the forest on the subject property as being a “pole age” stand, with stem diameters most commonly from 12 to 20 inches. The forest canopy is relatively closed; the understory is relatively open.

Mr. Hollins did not do a survey to determine what, if any, forest interior birds lived in the forest on site. Mr. Hollins stated he had not seen, during his site visit, any deer, rabbits, squirrels, raccoon, possum, woodchuck, foxes, turtle, frogs or toads. However, the Arundel property is potential habitat for these species.

Mr. Hollins would generally agree that riparian forest, which are forests surrounding wetlands, streams, and rivers, should be maintained, established or enhanced to protect and improve water quality.

It would take 40 – 50 years to replicate the forest which is to be covered with the proposed stockpile, according to Mr. Hollis.

Mr. Hollins, examining Applicants’ Exhibit No. 69, (Section 7-701 of the Public Utility Company Article, Maryland Annotated Code [Old Growth Timber section]), gave his opinion that the subject site did not contain any old growth forest in the location of the proposed stockpile.

While a Forest Stewardship Plan was prepared by Arundel, Mr. Hollis stated that there is no legal requirement that it be done, nor is it a condition of the mining permit. It was prepared because to do so was viewed as good science and good management and stewardship.

Mr. Hollins disagreed with the recommendation of the Forest Stewardship Plan, which found forest interior dwelling species as “limited”. He disagreed because the paragraph in the plan discussing forest interior dwelling birds is not complete in that it does not deal with all forest interior dwelling birds. Furthermore, it does not relate the Arundel forest to other contiguous tracts of forest.

Mr. Hollins had not prepared a formal study to determine the presence of any migratory forest interior dwelling birds on the site of the proposed stockpile. Mr. Hollins believed that the habitat for birds could be increased by adding diversity to the subject site. He agreed that certain birds may be displaced when the forest is cleared. Their displacement would be temporary only. He also believes it is possible some of the nesting birds within the site to be cleared will begin to nest in trees on the remaining uncleared site. Those birds also would find other areas within Harford County which contain suitable habitat.

He did not believe that the proposed location of the stockpile is inconsistent with the Forest Stewardship Plan. The Stewardship Plan allows for management of the forest, and typically requires an update annually, or every 3 to 5 years.

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In addressing Map turtles, Mr. Hollins stated he had not walked the shoreline or railroad tracks because that is not part of the project area. Map turtles are a product of lakes and large rivers. The Susquehanna River is outside of the footprint of the proposed project. These animals come onto land where there is easy access, but they do not travel up into tributaries.

The property on which the proposed stockpile is to be located is not part of the ravine system of steep slopes. According to the witness, sediment and storm water run-off could degrade the quality of wetlands and tributaries on which turtles depends.

Mr. Hollis believes that the relocated stockpile would have little impact on the animals and amphibians which inhabit the proposed stockpile area. His opinion is that the impacts on animal life by the movement of the stockpile would be minor and temporary.

Next, being taken out of order and as part of the Protestants' case, appeared Katherine Squibb.

Dr. Squibb was offered and accepted as an expert in the fields of toxicology and epidemiology, including the toxicology of ambient air particles and environmental and public health risk assessment and management.

Dr. Squibb explained how she would prepare an assessment of the health risk of moving the overburden stockpile. She would first do an exposure assessment of what things would be like in the future as opposed to what things seem to be now. She would do an estimate of the truck traffic involved in moving the overburden. One would also have to know the silica content of the overburden and the size of the particles in order to determine the composition of the dust to be generated. Dr. Squibb stated that she has, at this time, no idea of the amount of truck traffic. She would also be concerned about exposing housing areas and people living near the quarry, both workers and students at the elementary school. One would also need to know the path the trucks will take and the particle size and silica component of the haul road.

After the overburden is moved one would need to know the quantity of emissions arising from the processing of the rock. She indicated that there would be a change in impact once the existing earth barrier was removed. Dr. Squibb questioned the exposure of the community under that circumstance. One also needs to be concerned about the elderly population surrounding the quarry.

All risk assessments need to take into account the most susceptible populations, including the older and younger people. Older people are "probably" more susceptible to PM 10 and PM 2.5. One also needs to know PM 10 concentrations and PM 2.5 concentrations and the silica component of both of these types of particles. Once all this information is accumulated one creates and calculates the risk assessment, which is a risk number. Residential exposures are different from occupational exposures, and most of what the witnesses have discussed in the case to date concern occupational exposures. Occupational risks are usually accepted as being higher than residential risks.

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Dr. Squibb believes the existing earthen barrier acts as a sort of barrier to the fugitive emissions and the emissions from the crushing of the stone getting up and into the community. She does not believe Arundel has provided a proper risk assessment for understanding the potential risks if it were granted the permit and the stockpile were moved.

In explaining the different potential emissions, Dr. Squibb explained that fugitive emissions are those that are not specifically related to the actual, on-going activities like crushing the stone. They would be created by activities as truck traffic, dumping the stone, and the dust that would be created when it is hauled in or out or put on barges. The calculations of these activities are not as accurate as the calculations of the emissions coming from the crushing equipment and the screening equipment. It also helps to know the silica content of the piles in trying to determine the content of fugitive emissions.

In discussing the impact of PM 10, Dr. Squibb explained that size is important because it is the PM 10 “in smaller particles” that actually get down in the airway passages of the lungs. Anything larger tends to get caught up in the nose or bronchus. Small particles of PM 10 or less will enter the alveola, which is the air sac. They then need to be cleared. If they are very insoluble (as are silica particles) they will then reside in the lung. Silica, in particular, will create fibrosis within the lung if not cleared and can develop from fibrous tissue around the particle. Tissue is damaged by its attempts to break down these insoluble particles. It is accordingly important to know the solubility of particles as well as their size.

A risk assessment is also affected by the fact that the overburden relocation will take 15 to 20 years. Insoluble particles can build up in the lungs and can accumulate within time.

Dr. Squibb testified that the National Air Quality Standard for particulate matter was created by the Environmental Protection Agency, and the 24 hour standard for PM 10 is 150. A new standard was recently created for PM 2.5.

Standards for air quality are based on epidemiological studies which show health effects at different levels of PM 10 and PM 2.5.

Dr. Squibb explained how ozone is formed. Ozone is formed from nitrogen oxides and volatile organic compounds (VOC) that primarily are created by gasoline combustion. With sunlight, these emissions chemically produce ozone. Ozone is a very reactive oxygen molecule that when breathed will damage the lung due to its reactivity with biological tissues. It can react with the membrane of the cell and destroy the membrane. Ozone will kill cells within the lung.

The standard level of acceptability from a public health standpoint for ozone is 120 parts per billion. A “Code Red” day is when ozone levels are above 120 per million. People who are susceptible to ozone should stay indoors on Code Red days.

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Harford County has fairly high ozone levels, particularly during the summer. Harford is in non-attainment for ozone, with the standard not always met.

Dr. Squibb stated that silica can cause silicosis. The primary health impact on workers exposed to silica is silicosis. It can also cause lung cancer.

Dr. Squibb said that damage to the lung from silica is believed to be related to reactive oxygen species damage. Radicals are formed when in the presence of macrophage, and also perhaps from in the silica particles themselves. These radicals damage cells, and can break up the membranes. As these cells die an immune response occurs and fibrosis develops. This can lead to silicosis and progress into lung cancer. She explained that fibrosis is the build-up of collagen, somewhat like scar tissue. Collagen is permanent. With development of collagen, a lung loses elasticity which causes breathing problems. Dr. Squibb indicated, based on her previous work, that a lung damaged by particulate matter can suffer further damage from ozone.

Dr. Squibb was concerned about the number of times that silica was sampled at the site by Mr. Levy and upon which Arundel's conclusions were based. She was also not privy to the wind data which would impact on the particulate matter concentrations. Furthermore, she does not believe that the calculations will be applicable to the future when the overburden pile is moved. She does not believe the modeling which was done is predictive of the future as conditions will be different. Removal of the existing barrier may change the results of modeling. Its removal necessitates a different model. Furthermore, it is not predictive of the future because tests were taken over a very short period of time and one would need to know literally which way the wind is blowing to accumulate results. The only modeling she has seen was based upon current conditions.

Dr. Squibb further stated that to test for environmental exposure one must consider the most susceptible populations. She stated, however, that there was no silica standard for environmental exposure, although there are standards for particulate exposure under the Clean Air Act. The Clean Air Act Standard for PM 10 is 150 micrograms per meter cubed for 24 hours. This means that if one collected a 24 hour sample it could contain no more than 150 micrograms per meter cubed of air that was pulled through the filter. For PM 2.5 the standard is 65 milligrams per cubic meter cubed for 24 hours. She found nothing in any of the studies which have been referred to in the case to date which have shown that these standards have been exceeded, except for two days in July.

Dr. Squibb stated that Arundel did a PM 10 measurement over a fairly long period of time, but the silica measurements were only for a short period of time.

Dr. Squibb stated that there exists a class of about 5,000 individuals in Harford County who suffer from pediatric asthma. There is an additional population of about 23,000 persons 65 and older who also constitute a vulnerable population. An additional class of 2,000 individuals have existing breathing difficulties.

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To summarize her comments concerning monitoring, Dr. Squibb stated that the monitoring stations were too few, but she cannot state how many would be necessary. She has no other reason to believe the monitored results were faulty, only that they were too few and not predictive of the future.

Upon cross-examination, Dr. Squibb acknowledged there is no reason to assume that crystalline silica levels are any lower in Baltimore than 3 micrograms per cubic meter. Three micrograms per cubic meter is a result of studies done in 17 urban areas by EPA. Dr. Squibb acknowledged that silica was not studied in the recent EPA sponsored Super Site study in which she participated. This is because silica is very difficult to measure, and one needs to do very special measurements. The study wanted to collect metals that could be measured. The methods that were being used in the Super Site study could not measure silica. Dr. Squibb further stated that literature generally acknowledges that crystalline silica in ambient air appears predominately as particles larger than 2.5 microns (Page 136), and that a very small portion of PM 2.5 is expected to occur as silica and silica emission.

Dr. Squibb further stated that ozone levels in the Baltimore region are significantly affected by sources that are 300 or more kilometers distant.

Dr. Squibb said that her understanding was that none of the monitoring at Arundel had been done when soil overburden was being deposited on the overburden pile. She acknowledged that she had not conducted a risk assessment.

Dr. Squibb acknowledged that monitored values for crystalline silica have all been well below the State screening value, and are well below values reported by EPA as background in most urban areas.

For the Protestants next testified David Frederic Goldsmith. Dr. Goldsmith was offered and accepted as an expert in environmental and occupational health including the effect of silica exposure on human health, and disease and environmental risk assessment.

Dr. Goldsmith defines “silica” as a crystalline form of silica dioxide, one silica molecule together with two oxygens. It is a very common material. It is used in cement and a wide variety of other building products. It is also a byproduct of the cutting of stone and materials such as ceramics. Silica in respirable form (small enough to get into the lungs) can last almost forever. Silica particles can grab hold of water droplets and form something which is too large to be taken into the lungs, provided water (such as rain) is present. Freshly fractured silica is created from, for instance, blasting. This type of dust has been demonstrated to be more biologically active than what is termed “aged” silica, such as silica that has been present on roads or on the bottom of mines. It has been known for many years that silica poses a threat to public health. Silica can also be a biologically powerful risk agent for other illnesses.

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The inhalation of silica causes injury to the lung. A direct injury sometimes cannot readily be detected. The lung tissue is replaced by fibrotic lesions which result in a loss of normal elasticity of the lung tissue, which is replaced by a hard fibrous material inside the chest. This is called silicosis. People with silicosis are forced to work harder, which sometimes results in a heart disease called Corpulmonale, which is an enlargement in one of the chambers of the heart and is usually a secondary effect of silicosis. Workers with silicosis may also contract tuberculosis.

The lung has cells called ‘macrophage’ which are designed to attach to an invader such as silica. However, silica is toxic to the macrophage. Silica destroys the macrophage which then begins a fibrotic lesion in the lung. Macrophage is also capable of moving silica particles into the lymphatic channels of the body. As this happens changes can be produced which ultimately lead to autoimmune diseases. This includes illnesses such as scleroderma, lupus, rheumatoid arthritis and nephritis. All of these have been linked to workplace exposure to silica.

Dr. Goldsmith stated that inhalation of silica has been shown, by a variety of studies, to increase the risk of lung cancer. While some can be moved by mucus out of the lungs, if small enough the particles can remain almost forever.

High silica levels combined with high ozone levels sets the stage for more biological activity than if only one or the other were present.

Dr. Goldsmith stated that at least one international organization, The International Agency for Research on Cancer, has classified silica as a known human carcinogen. Other organizations support that decision.

Dr. Goldsmith believes that silica causes cancer.

Dr. Goldsmith described rheumatoid arthritis as an “effect” on the lymphatic system. It produces joint pain and difficulties moving muscles, wrists, fingers and knees. It has been shown to have been produced by high dust levels, including high silica dust levels. Scleroderma is a disease indicated by changes to skin coloration on the hands and elbows, impacts the internal organs, and is a severely debilitating autoimmune disease. It has been linked to silica dust exposure. Kidney disease has also been shown to be linked to silica dust exposure. He does not agree with Dr. Graham’s testimony that the data linking rheumatoid arthritis, scleroderma and renal disease with silica is shaky. He believes there is strong evidence of a link.

Dr. Goldsmith believed that PM10 monitoring stations on the actual Meadowvale School playground would have been helpful.

Dr. Goldsmith has seen no modeling for the potential impact of silica and other dust emissions from moving the overburden, nor has he seen anything concerning the potential for the general drift of silica containing materials from the site.

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Dr. Goldsmith described three types of activities which should be addressed. The first is the movement and extent of the overburden that is already piled up. The second is the movement of new overburden which would be uncovered when the quarry expands its operations. The third would be the trucks as they are moving on quarry land.

Dr. Goldsmith stated that dust kicked up by trucks is a significant source of emissions. This is controlled by quarries by paving the roadway and/or by the application of water on the road. Furthermore, workers can wear appropriate personal protective equipment. He indicated there may be other ways of erecting barriers to keep dust impact on the neighborhood down. Furthermore, covered conveyors could be used in place of trucks to maintain dust levels.

Dr. Goldsmith believes that the past monitoring activity is not sufficient to show what the silica levels will be “in a huge overburden pile that is right next door to an existing community.” Dr. Levy’s work is not sufficient to understand the risk of moving the silica pile. In order to understand any future impact of the movement of the overburden pile, one must understand wind direction, temperature, humidity, types and kinds of plants.

Dr. Goldsmith addressed the silica measurements which had been taken in 1997 (Exhibit 9). In his opinion those levels are not predictive of what would happen when the overburden piles are moved to the proposed site.

He believed that the location of an overburden pile could act as a barrier between the mining operations and the community.

Dr. Goldsmith stated that the employee physical examinations performed by Arundel are not sufficient to determine if an employee has silicosis. The physical exam is relatively elementary. Furthermore, there is “probably” a minimum of ten years of exposure to respirable crystal and silica necessary to produce health effects. Accordingly, it is not possible to make conclusions concerning the health effects to employees without doing follow-up exams. Dr. Goldsmith opined that the only way to determine the presence of silicosis is to obtain chest x-rays. Employee health questionnaires mention nothing about the potential of silica and related risks of moving the overburden pile. Dr. Goldsmith feels that the studies which had been done are not predictive of the future as those studies have not looked at those future activities, including trucks moving on the roadways, movement of the overburden pile from one location to another, and the movement of the berm that now exists between the community and the operations of the quarry. Because of this, one cannot make an estimate of how much exposure will take place.

Dr. Goldsmith further indicated that the movement of the barrier between the quarry and the Meadowvale community could effect the movement of dust from the quarry into the neighborhood. He did not, however, recall the exact location of the barrier which he had been discussing. Dr. Goldsmith stated that he had not attempted to determine the effect on air quality of either installing or moving of berm which was placed between the monitoring location and a source of particulate matter.

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Dr. Goldsmith indicated that particulate matter, including particulate silica which is 10 microns and smaller in size, are considered dangerous. It made no difference if they were classified as 2.5 microns in size or smaller. The respirable range is 10 microns or smaller. Dr. Goldsmith is not familiar with any silica dust sampling which has differentiated between silica of less than 2.5 microns in diameter, and those between 2.5 microns and 10 microns in diameter.

Dr. Goldsmith generally agreed with Dr. Squibb's testimony that particles smaller than 2.5 microns are more hazardous than those greater than 2.5 microns, up to 10 microns. Dr. Goldsmith knows of no studies which compare toxicity of silica particles of less than 2.5 microns to that between 2.5 and 10 microns. However, he stated that freshly fractured silica has much more biological activity than aged silica. Silica is considered freshly fractured until it comes into extensive contact with air or weather. In that event the smaller the particles conglomerate into larger ones. Silica may continue to be freshly fractured despite being in a berm or overburden pile for an indefinite period of time, provided it has not been exposed to air or water.

Dr. Goldsmith stated that the modeling done by Arundel is not indicative of the future plans of Arundel.

It is possible to model the impact of the proposal, although he has not done such modeling.

Dr. Goldsmith agreed that a cumulative exposure of one milligram per cubic meter years of silica would result in a cumulative risk of close to zero percent, assuming no other respiratory ailments (Page 104).⁹ Dr. Goldsmith agreed that the reported silica exposure around the quarry was .5 micrograms per cubic meter as measured in 1997. It will accordingly take 100 years of exposure at that level to have an exposure equivalent to one milligram per cubic meter year. However, Dr. Goldsmith stated this had not been studied directly.

Dr. Goldsmith also criticized Dr. Graham's findings concerning lung cancer as being incorrect. Dr. Goldsmith believes the studies show that the risk for lung cancer increases by the greater time spent working in the stone cutting industry for both those workers before 1940 and after 1940. He believes the studies show that workers before 1940 and after 1940 have the same lung cancer risk, and it is statistically significant.

Dr. Goldsmith stated that the California group known as OEHHA has established an acceptable level of crystalline silica at 3 micrograms per cubic meter. He believes that this level allows the California State Legislature to order quarry operations to cease when a particular user generates over 3 micrograms. Dr. Goldsmith stated that the readings around the Arundel quarry were approximately one-half of that level, or 1.5 micrograms maximum.

⁹ One milligram equals 1,000 micrograms.

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Maureen Barrett was next called by the Protestants. Ms. Barrett was accepted as an expert in air monitoring, air modeling and applicable Federal and State laws and regulations.

Ms. Barrett explained that dispersion models are used to calculate impacts based on emissions that one puts into the models. Impacts are concentrations. When asked what factors are considered when running an air dispersion model, Ms. Barrett indicated the important thing is that the input to it are dependent on the site and dependent on the best factors that one has for estimating the emissions. Surface characteristics are very important, as well as meteorological conditions.

Ms. Barrett was asked to explain the term “maximum potential emissions.” She indicated this is actually the emissions of a piece of equipment when assumed to be running at full capacity, and using EPA emission factors. This allows a calculation of equipment’s maximum potential emission. It is important to calculate maximum potential emissions in order to calculate worst case scenarios. Ms. Barrett explained that this approach is insisted upon by regulators, as in order to assess air quality impacts regulators must know the potential worse case. This helps them determine the maximum potential impact adjacent to the source. State regulators also need to know, for purposes of working with the State implementation plan, what the State’s annual emissions are. This figure is used by the State to determine its threshold levels, being its ability to meet the Clean Air Act thresholds for the particular State plan.

Ms. Barrett then explained the Screen Three model. This is a U.S. EPA guideline model. It is a simple model. It assumes the wind is directly toward the receptor that is defined, that the emissions are impacting that receptor directly, and it has both simple terrain and complex terrain capability. Complex terrain exists at the Arundel site. It uses a Gaussian dispersion model that integrates the equations of motion and horizontal direction. It integrates where the pollutant is moving to the receptor and how the wind is carrying it, both in the vertical and sideways directions. She uses a Gaussian dispersion to make an estimate of how the emissions plume is spreading.

A receptor is a point some distance from a source which is generating potential impacts.

Ms. Barrett explained that she had conducted her own analysis using an EPA approved model of the potential impacts of the Arundel Quarry. She looked at PM 10, PM 2.5 and CS 10, or crystalline silica under 10 micrometers. She used a Screen Three Model, the same model as Mr. Levy used. She produced charts showing her results.

Ms. Barrett, preliminarily, explained the applicable Federal or State 24 hour standard for PM 10 is 150 micrograms per meter cubed. The 24 hour standard for PM 2.5 is 65. For crystalline silica the screening threshold MDE uses and asks applicants to use with their modeling analysis is 0.5.

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Ms. Barrett then explained her modeling results. She assumed maximum potential emissions from the facility, which she breaks down into three processes: surface mining activities, stone crushing, and the movement of overburden. All three have been included in the Screen Three model. She determined the impacts of each of the sources at each of the receptors, points, located in the Meadowvale area as well as along Lapidum Road.

For PM 10, the Screen Three results show that impact at the Meadowvale receptor exceeds the National Ambient Air Quality Standard, not including existing background.

For the Lapidum receptor, her model shows 76, which is not an exceedence of the 24 hour PM 10 standard. For PM 2.5, her model does not show an exceedence of the 24 hour standard. For 8 hour crystalline silica value, the impacts do exceed the screening threshold.

Comparing her results with Mr. Levy's calculated impacts, Ms. Barrett indicated that Levy's calculation for PM 10 was 42, maximum 24 hour value, versus 150 for Ms. Barrett's findings. She did not see any findings from Levy for PM 2.5.

Exhibit No. 13 represents actual tons per year values, using maximum potential emissions. According to Ms. Barrett's findings, the total emission for the quarry is 315 tons per year of PM 10; 26.2 tons per year for PM 2.5, and about 9 tons per year for crystalline silica.

Ms. Barrett explained the MDA major source threshold, which is a trigger to determine if the emitter should be subject to more onerous permitting requirements, is 100 for PM 10. Regulations not yet been promulgated for source threshold for PM 2.5.

EPA's definition qualifies crystalline silica as a mineral fiber, which is classified as a hazardous air pollutant under Title III of the Clean Air Act. Her findings do not suggest that crystalline silica (CS 10) is a major source of air pollution.

Ms. Barrett explained the difference between PM 10 and PM 2.5 was strictly one of size. Ms. Barrett then explained the chart which she had developed, marked as Exhibit No. 14. The chart divides the Arundel process into three parts: surface mining; stone processing; and proposed overburden. Ms. Barrett then described Exhibit No. 15, which represents the 3 different categories of processes at the Arundel facility. She created area source emission rates for these categories.

Ms. Barrett explained the difference between her modeling results and those of Mr. Levy. She stated that Mr. Levy did not input maximum potential emissions into his model. He did not consider the proposed movement of overburden in his model. Ms. Barrett understood that Mr. Levy determined the crystalline silica emissions by taking a percentage of PM 10. The percentage used by Mr. Levy of PM 10 was approximately .2 percent. Ms. Barrett believes that value is not correct. She believes, based on the data which she has reviewed, that crystalline silica as a percentage of PM 10 is anywhere from .9 percent to over 7 percent.

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Ms. Barrett referred to the RJ Lee report (marked as Exhibit No. 16), which describes the crystalline silica percentage of PM 10 as 7.7 percent. Ms. Barrett used an assumption of 2 percent for surface mining activities and 4 percent for stone quarrying processing. Ms. Barrett believes that Mr. Levy's use of .2 percent affected his predictions of crystalline silica impacts resulting in an underestimation of the maximum potential impact.

Ms. Barrett indicated that the crystalline silica percentage of PM 10 is a value which needs to be tested frequently. Ms. Barrett believes that the value should be tested as a new area is opened up, and when a change in operations is made.

Ms. Barrett believes Mr. Levy did not choose the correct options in his modeling. In particular, Mr. Levy's "flag pole" receptor choice was incorrect. That receptor choice is intended to estimate an impact at the top of a building. When studying complex terrain the result which follows from the use of flagpole receptors is different. She would expect that projected impact to be less.

Ms. Barrett reviewed the raw data from the Arundel monitoring program. She believes Mr. Levy's monitoring data shows values that are significantly higher than the modeling results. She is concerned about such a difference between modeling and monitoring. She believes that the monitored levels of crystalline silica indicate that the model should be reviewed to determine whether or not the emissions are correct. Given that there were just 12 samples, it is hard to determine whether or not those impacts are from the quarry or some other use. She would use maximum potential emissions in her modeling.

Ms. Barrett indicated that one cannot make a reasonable and reliable assessment of the amount of respirable material, including crystalline silica, that a resident living near the quarry would be exposed to over a period of time, based upon the monitoring and modeling data proposed by Mr. Levy. Ms. Barrett indicated that she would want monitoring data of at least one year in order to model impacts from the quarry. She does not need wind speed and direction. Screen Three does not need that. In the case of PM 10, the monitoring would be every 6 days.

Ms. Barrett was then cross-examined by the Applicant. Ms. Barrett stated that the models she had used did not use monitored data, it used assumed values. It used standard and assumed conditions. She did not use any measurements from either Aldino or Meadowvale.

Ms. Barrett stated that the model Screen Three uses a "valley model". This model assumes that the receptor is located on a hill, and is impacted by the plume directly. Ms. Barrett agreed that there are now more sophisticated models available than the valley model used by her. She stated that the Screen Three model, if anything, over-predicts.

Ms. Barrett believes it is noteworthy that there are monitored values at the monitors around the quarry that had higher concentrations than the concentrations which Mr. Levy's model predicted as the maximum impact at those monitors. She stated it is possible that the higher monitored values at those locations could be a result of contributions from other sources, depending on wind direction.

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Ms. Barrett explained that when attempting an air quality impact assessment, a screening model is first used to determine if there is an air quality problem. A more sophisticated model is then employed that would be less inclined to over-estimate impacts. If one exceeds the screening threshold level (as Ms. Barrett's analysis for the Arundel plant does), then one goes to the second tier analysis. One starts with a conservative model, and progresses to one that is more sophisticated and less conservative.

She indicated that an area source has a characteristic length, area, or size associated with it. An example of an area source may be an activity which is occurring over, for example, a half acre. The model assumes that the emission is essentially uniformly provided throughout the area that is being modeled. Ms. Barrett's Screen Three model used a point source model.

Ms. Barrett indicated that her model did take into consideration complex terrain. Ms. Barrett agreed that model assumes that the emission plume only rose 2 meters. Ms. Barrett indicated that she did not do modeling for the actual site itself. The model differs from what is happening on-site.

Ms. Barrett believed, to a reasonable degree of certainty, that her model's predicted results would have been different if she had selected a different receptor height than that activity used, which was 70 meters or 130 meters. Ms. Barrett stated that bulldozing is the largest contributor to particulate matter. The proposed overburden and traffic impact is then combined. These features account for over 90% of emissions estimates.

Ms. Barrett then described the approximate locations of the source points which she used in running her model.

She assumed, in her model, that all emissions from the Arundel quarry, including the roads used to carry the dirt, are coming from a single yard wide area in the eastern end of the red zone above Meadowvale. Her model further assumes that all the wind carries all emissions directly to the monitor, although there is some dispersion over that distance.

The witness assumed that all emissions from the movement of the overburden pile were coming from one location at the edge of indicated area closest to Lapidum.

Ms. Barrett stated she did her best to simulate Mr. Levy's procedures. However, she used the data as if it were coming from point sources, not area sources.

Ms. Barrett explained that the models assume a single direction in which the wind is blowing, which is toward the receptors. In every case, the models assume that the plume is directed to the receptor.

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Ms. Barrett indicated that 100 tons is a major source threshold for the purposes of new source permitting in the State of Maryland. Ms. Barrett also indicated she had assumed bulldozing in the surface mining operation would take place every hour of the day, every day of the year. This is based upon MDE's air permit, which does not limit the hours of operation. She also assumed 6 bulldozers would be operating simultaneously. Ms. Barrett indicated that her modeled results of impacts from the stone processing would be reduced by a reduction in operating hours from 24 hour, 7 days a week.

Ms. Barrett stated that she had used a Screen Three model as it is an EPA guideline model, also used by Mr. Levy. The key differences between her analysis and that of Mr. Levy's were the percentage of crystalline silica, and the total emissions that were assumed. She models maximum potential emissions to estimate the worst case impact.

Owen Neighbours, employed by Arundel as the company geologist, was next called by the Applicant. Mr. Neighbours is project manager/coordinator for several different projects, including exploration for new products. He deals with mine permitting and zoning issues.

Mr. Neighbours has been employed by Arundel for 20 years and is familiar with the subject property. He has been involved with drilling, and with various mine permitting, wetland permitting and zoning issues on site. He has visited the subject property four or five times a month over 20 years. Mr. Neighbours was familiar with the condition of the property during 1997, and is familiar with the location of the emissions monitoring stations constructed in 1997.

Mr. Neighbours described the existing 1,500 foot buffer between the quarry operation and the Meadowvale community. This buffer is located to the south of the existing pit and east of the Meadowvale community (referring to Applicant's Exhibit No. 6). Presently a 40 foot high overburden pile exists within the buffer, established in 1990. This overburden pile is within the last 500 feet of the 1,500 foot buffer. Mr. Neighbours indicated there had been some "spillage" in the northeast corner of the overburden pile. Mt. Arundel was constructed in the years prior to 1997, with some resulting spillover onto the 40 foot overburden pile located within the buffer. Accordingly, during June 1997 to September 1997, 251,000 cubic yards of spillage were removed from the 40 foot overburden area and taken back to the top of Mt. Arundel (Pile No. 1). At the same time, another 900,000 cubic yards of material were relocated to the northeast corner of the quarry closest to the I-95 bridge. (Mount Aspinall)

According to Mr. Neighbours the total material moved during the year 1997, including the spillage that has been moved back to Pile No. 1 and the relocated overburden, was 1.1 million cubic yards.

Mr. Neighbours identified a photograph of the 40 foot high overburden storage pile within the 500' foot buffer. The photograph showed the storage pile with Mt. Arundel behind, and the spillage onto the 40 foot pile. Mt. Arundel is hiding the 40 foot high pile and appeared to be 40 to 50 feet higher. Mr. Neighbours explained that he had calculated, as the Arundel geologist, the amount of overburden which Arundel plans to remove and re-locate. He explained the process which he undertook to arrive at that calculation.

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Basically, this involved comparing topographies which were taken in 1988 and 1998 for Pile No. 1. For Pile No. 2, topographical maps made in 1998 and 2004 were examined. The differences in elevations as shown on the topographical maps was then calculated. This resulted in an estimate of the amount of overburden to be removed. Mr. Neighbours has calculated this to be approximately 8 million cubic yards, but could be as low as 7,250,000 cubic yards. Mr. Neighbours believes his calculations have an accuracy of plus or minus 10 percent, with 8 million cubic yards being on the high end.

Mr. Neighbours stated that the Applicant is willing to agree to a condition of approval that plantings of trees, shrubs and grasses to be installed on the stockpile would be made in a manner to promote diversity of habitat, and would be made subject to the approval of the Maryland Department of the Environment.

Mr. Neighbours did not know if overburden was stored on the ground in the area of Pile No. 1 at the time of the 1988 topo. Mr. Neighbours had earlier testified that the amount of overburden was determined in that area by comparing the 1988 topo with the 1998 topo. Mr. Neighbours testified that with regard to Pile No. 2 (Mount Aspinall), the 1998 topo was compared to the 2004 topo. The 1998 topo was of original ground level.

Mr. Neighbours stated that the material under the overburden that is being moved is mineable, good rock and will be excavated. Below the existing 40 foot overburden layer there is nothing but mineable, saleable rock.

Next for the Applicant testified Bill Aspinall, who identified himself as a plant manager of the Havre de Grace quarry. As such, he has responsibility for all operations to the quarry, including production, shipment and overburden removal.

Mr. Aspinall stated that the overburden is to be moved and relocated over a 15-year time period. Mr. Aspinall has developed a plan to move the overburden, based upon a 40 hour work week. Given an 80% efficiency factor, he believes the entire overburden could be moved in approximately 7 years, although the plan is for 15 years.

Mr. Aspinall feels that the best option is for Arundel to move the overburden with their equipment and personnel. Arundel can then control the equipment being used, as well as the hours worked.

Four haul trucks will be used. Each has a 100 ton capacity, which translates to about 67 cubic yards per truck. The equipment being recommended is Caterpillar equipment. He feels four will be the optimum number in order to optimize the cycle, and the movement and flow of the fleet. Once the cycle begins, a truck will be at the loading point, one will be at the dump point, one will be headed towards the dump point, and the other will be returning. This will be a very efficient operation. In addition, there would be one bulldozer on the new storage pile as the material is being relocated. Another dozer will be employed at the removal pile, pushing materials to the loader. One other, smaller dozer will be used periodically to grade slopes on the outer slopes of the stockpile.

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Mr. Aspinall estimated that each truck will make approximately 2.55 trips per hour. Trucks will travel between 83 and 58 miles per day. In addition, the water truck would run about 10 miles per day.

Mr. Aspinall described Arundel's overburden relocation plan (introduced as Applicant's Exhibit No. 90). He has tried to optimize the equipment necessary to move 7.8 million cubic yards of overburden. The overburden will be moved 8 hours a day, 5 days a week.

The loader is the one piece of equipment which determines the system capacity. All haul roads and travel areas will be watered. Mr. Aspinall believes that overburden generally retains water well and it is rare to need to wet the overburden itself in order to control dust.

On cross-examination, Mr. Aspinall described in more detail the manufacturer of and type of equipment which will be used to move the overburden. He explained the current plan is to move the material in Pile No. 2 to proposed overburden storage pile, and then the material in Pile No. 1. Generally, the overburden storage stockpile will be filled from south to north in four stages. Mr. Aspinall also generally described the proposed locations of the haul road.

Arundel, according to Mr. Aspinall, has one main water truck and one back-up water truck. Current production at the plant is similar to the production during the year 2004. More material was produced in 2004 than in 2003. In fiscal year 2004, approximately 4.6 million tons of material was sold. In 2003, between 4.2 and 4.3 million tons of material were sold.

Mr. Aspinall indicated that water trucks are used as necessary. Dust is controlled. If dust requires the truck to be run, the truck runs. The management team makes the decision. The water truck runs whenever the plant is operating, except when it is raining and water is not necessary. The water truck is the most important piece of mobile equipment which Arundel has on site. If production work is scheduled, the water truck is also scheduled to work.

Next testified David Mummert, employed by the Maryland Department of the Environment, Air and Radiation Management Administration as Division Chief in the Air Quality Permitting Program and responsible for Title V Permitting.

In 1997, Mr. Mummert was charged with representing the Maryland Department of the Environment with respect to air quality issues and was responsible for presenting the position of the Department with respect to those issues.

In response to the concerns raised by citizens the Department had a staff toxicologist review the incidences of cancer in the Arundel area and to review the Maryland Cancer Registry. The Department also did a "quick" screening of the quarry for crystalline silica impacts.

Based on that screening MDE determined that, at the levels which would be emitted, the levels of crystalline silica will not endanger public health.

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No air quality monitoring was done prior to 1997, according to Mr. Mummert. As a result of the citizens' concerns expressed in 1997 Arundel began a monitoring program. Mr. Mummert's Department worked with a consultant who installed the air quality monitoring system. MDE also provided quality assurance during the audits of the equipment.

Mr. Mummert identified an analysis he prepared based on the monitoring results, accepted as Exhibit No. 45. This analysis showed that the numbers for PM 10 were well below the National Ambient Air Quality Standards. Levels for crystalline silica were at the very low range, basically background levels. There was one day during which levels were above screening levels but, on the average, the levels were actually at the very lowest levels one would see anywhere in the country. The day in which the crystalline silica levels were high was also a day of high ozone levels.

Mr. Mummert relayed these findings to the complaining citizens who lived around the quarry. Monitoring continued through about 1999. The subsequent monitoring results were consistent with 1997 results.

Mr. Mummert also identified a memo prepared by MDE's toxicologist, (marked as Exhibit No. 46). The findings of the toxicologist were that levels of crystalline silica did not rise to a level which would endanger public health.

The Department's position concerning the movement of overburden is that it is simply a typical construction activity of moving dirt. The Department is of the opinion that there would not be a greater impact than would be from a regular construction site and, accordingly, would not represent a negative impact on the citizens or cause any public health issues.

Mr. Mummert identified the official surface mining permit issued by the Department, marked as Applicant's Exhibit No. 91. This permit is dated August 2004.

Mr. Mummert then identified a letter which he had received from the Maryland Law Clinic. (Applicants' Exhibit 92) This letter suggested that emission calculations were at such a level that a Part 70 permit is required to be issued by the Department under Title V. Mummert is responsible for the Title V programs, so his supervisor asked him to review the letter. He was asked to review the emission calculations to determine if they were correct.

According to Mr. Mummert, the response of the Department to the inquiry from the Maryland Law Clinic was that the estimated emissions are overestimations, with the actual emissions being significantly less than that presented in the Maryland Law Clinic letter. The Department believes that the emissions were below the levels at which a Part 70 permit would be required. The response letter from the Maryland Department of the Environment is dated May 16, and was marked as Applicant's Exhibit No. 93.

Mr. Mummert indicated MDE had not conducted any independent sampling of emissions from 1997 to the present time.

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Mr. Mummert testified that the Department's conclusion was based upon the monitoring data which was collected and reported by Arundel in 1997. It is based upon what the monitors actually collected during those periods of time. Accordingly, it was not directly impacted by production levels. Mr. Mummert explained that the Department has reports from Arundel from 1990, showing the production history of the facility. Since 1997, there has not been any significant change in production levels which would impact emissions.

The Department made no recommendations as to the number of monitors that should be placed on site.

Mr. Mummert stated the Department has not made a recommendation to place a monitor closer to the area of the proposed overburden movement. The Department does not believe that movement of the overburden is going to significantly impact the air quality in the area. The type of pollution that is going to be generated is in large particles. The Department is not concerned about health related issues that lie in the PM 2.5 and PM 10 range. The type of particles that will be generated will be large particles, which cause nuisances to the neighbors, but which are not health related. The Department believes that additional monitors, if established, would not detect change in emissions.

Mr. Mummert believes that significant amounts of white or brown material (dust) rising from the area of the crushing operation would be a violation of the MDE regulations with respect to visual emissions. The regulations provide that a source has to use reasonable precautions to prevent particulate matter from becoming airborne.

The witness indicated that there were no independent audits of Arundel's reporting of production levels for emissions. The only air quality information which MDE has, aside from field reports, are the air quality testing reports from 1997 and 1998 from Mr. Julian Levy and others. These were all furnished by Arundel's consultants.

Mr. Mummert stated that the production figures which MDE used in its analysis contained in the May 16 response letter to the University of Maryland were based upon the manufacturer's rated capacity for the equipment that produces the emissions. The Department calculated the potential production capacity, and did not use actual production. It was based upon the applications of the equipment and the rated manufacturer's specifications. If a particular piece of equipment is rated at 400 tons per hours, the Department uses 400 tons per hour.

The 1997 monitoring program was audited by MDE as standard protocol requires.

Mr. Mummert's contribution to the MDE response is labeled "Fugitive Emissions from Surface Mining". That calculation is based on current conditions. Mr. Mummert used many of the same assumptions as did Ms. Barrett. Ms. Barrett's analysis was similar to how the Department goes through its analysis. Mummert's calculations were not an attempt to project fugitive emissions from the future.

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Mummert testified that dust is not a health issue. The size of the particles is the issue. Particles from construction activities and moving dirt create large particles which do not impact public health, because they are not smaller particles from the PM 10 to PM 2.5 range. Mr. Mummert stated that his spreadsheet does show some PM 10 generated by bulldozing overburden, as well as some PM 2.5. Mummert stated that he was comparing his calculations to Ms. Barrett's calculations concerning current mining operations.

Mummert testified that fugitive emissions have been determined not to be a public health issue. MDE did not attempt to calculate fugitive air emissions.

The Department does not regularly conduct ambient air monitoring on construction sites or on sand and gravel operations. The Arundel monitoring is very unusual. The Department feels comfortable in the Arundel case because it has actual monitoring data, data which it normally does not have. The Department does not believe anything has changed since 1997. The Department has no reason to believe that a measurably different result would be recorded if the monitors were in place today.

The Applicant next called Michael Staiano, a noise control engineer with Staiano Engineering, Inc. Mr. Staiano performs engineering noise and vibration measurement analysis, prediction and control. Mr. Staiano was offered and accepted as a professional engineer qualified to render opinions with regard to noise control.

Mr. Staiano indicated he had been retained by Arundel to conduct a noise analysis pertaining to a proposed movement of two existing soil stockpiles into one pile. He had reviewed transcripts in the case, was familiar with the quarry operation, and had reviewed certain of the Applicant's exhibits including the site plan.

Mr. Staiano's undertaking was to determine noise which would be generated from the operation, evaluate whether the noise would subject the surrounding residents to an unacceptable level and, if so, determine the mitigation necessary to make it acceptable.

Mr. Staiano, after his analysis, determined that if mitigation and other modifications were not made to the operational plans the predicted noise levels would be unacceptable to the surrounding communities. As a result he has recommended certain modifications to make the noise levels acceptable. Mr. Staiano's report was offered as Exhibit No. 96.

Mr. Staiano then summarized his report. Sound is weighted to correspond to the human ears response, referred to as A-weighted decibels, and given the unit designation of "dba". Code of Maryland Agency Regulations (COMAR), also refers to noise in terms of A-weighted sound levels, or dba. Sound tends to fluctuate. Noise from equipment, such as earth moving equipment, also fluctuates. The fluctuation of sound must be considered when one talks of noise sound levels. Accordingly, when noise is discussed maximum levels are used, while much of the times noise will tend to be at less than maximum levels.

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COMAR incorporates certain sound levels. It is intended to protect Maryland residents from noise exposures. COMAR limits have been adopted as design criteria in evaluating the Arundel proposal. When Mr. Staiano talks about a “receptor” he is talking about a person hearing the sound as opposed to the source, which would be equipment generating the sound.

State of Maryland mandated noise limits are 65 decibels, (dba) during day time, and 55 dba at night. Night time is defined as 10:00 p.m. to 7:00 a.m. During night time the maximum allowable sound exposure for a residential receptor is 55. During daytime hours the maximum allowable sound level for a residential receptor is 65 dba.

Sound is measured by using an electronic instrument, referred to as a sound level meter. Another way to quantify noise is by mathematical calculation. Arundel’s proposed activity does not yet exist, so Mr. Staiano mathematically computed the sound waves which he predicts will be generated.

Mr. Staiano looked at loading machines, haul trucks and dozers. He looked at the worse case scenario which in this case is equipment being located on the top of the pile, perhaps being in full view of people when they hear it. This equipment would include a large earth moving haul truck, and two types of dozers. The largest dozer would be a Caterpillar D-10 model, the smaller would be a Caterpillar D-6 model. The larger dozer would be the noisiest. He looked at two machines operating at the same time.

Mr. Staiano’s initial evaluation was done in 1995. At that time he evaluated a wheel loader, Caterpillar 992-C, rubber-tired front end loader with a thirteen and a half cubic yard bucket, and an 85-ton hauler, a 50 ton Caterpillar hauler, a track dozer, Caterpillar D-10, and blast hole drill. Of those machines only the 85-ton haul truck and the D-10 dozer would be used on top of the pile.

Mr. Staiano had a typical haul truck run at maximum engine speed to produce the maximum noise. He then measured the sound on four sides, 50 feet to 100 feet away from each side. He then averaged the sound level measured at 100 foot distance. Mr. Staiano had the bulldozer run past his equipment as it is important to get the noise from the crawl tracks. Again, noise was calculated at a 100 foot distance. Mr. Staiano also estimated the noise coming out of the exhaust system, which is somewhat elevated above the height of the equipment in order to determine the impact of the noise on surrounding people. The back-up alarm on the dozer was also tested.

Mr. Staiano’s resulting findings were 84 decibels for the haul truck and 89 decibels for the dozer, all as measured at 100 foot distances.

Mr. Staiano then calculated mathematically the sound levels which would be perceived by the residents. Mr. Staiano stated that, generally, if distance is increased by a factor of 10, sound level is reduced by 20 decibels. In addition, atmospheric absorption attenuates sound, as does the ground. Soft ground absorbs sound; hard ground does not. Soft ground would be earth, lawn, trees and shrubs. Hard ground would be pavement or a water surface.

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Temperature and humidity also effect sound. For the purpose of his study Staiano selected the temperature and humidity which would have the least amount of attenuation. This was done, again, in order to present very conservative figures. The last attenuation factor would be any potential barrier. This would block sound from any noise source to a noise receptor. This would be similar to a noise barrier on a highway.

Mr. Staiano then referred to his report, specifically figure 2 on page 14.

Mr. Staiano's study initially contains two significant findings. The first was that operations could not commence at 6:00 a.m. without violating COMAR noise regulation, unless a berm were formed. Furthermore, the daytime limit was also exceeded, although by a lesser amount. The recommendation to Arundel was that it eliminate all nighttime operations and begin operations no earlier than 7:00 a.m. Furthermore, in order to meet daytime requirements, Staiano recommends that the height of a surrounding berm be 20 feet.

Mr. Staiano evaluated six different receptor locations around the proposed quarry; one to the south; one at Grace Harbor; a single farmstead, and various representative residences in the Susquehanna River Hills subdivisions. For each receptor location Mr. Staiano evaluated the noise levels received. Generally, Mr. Staiano found that the highest sound levels will be on the piles at their lowest elevations because at that point they are closest to the noise receptors.

Mr. Staiano indicated that electronic back-up alarms are not incorporated into his sound level measurements. Their operation is not limited by COMAR. However, alarms are a sensitive issue as they can be annoying to the neighbors. They are required by regulation (the Mining Safety and Health Administration) to be installed on mobile equipment for safety protection. However, Mr. Staiano found that the sound level generated by the devises on the equipment which were tested may be more than sufficient for audibility. Accordingly, he is recommending to Arundel an alarm which produces no more sound than is adequate for meeting this audibility in safety equipment. The back-up alarm tested was a relatively loud Type "B", and tested out at 81 dba. He recommends that a Type "C" or "D" alarm be considered which would provide sufficient warning but which would provide 10 decibels or more attenuation. It is possible, he testified, that a quieter alarm may be sufficient.

Mr. Staiano described a schematic illustrating the implementation of the berm configuration on top of the pile, as suggested by his report. (Exhibit 98) His suggestion is that the berm be built progressively with the pile. The berm would fully shield one lift at a time. When that lift is filled out, the berm is then rebuilt so that the next succeeding lift, as it is filled, is shielded. This mitigation measure would be constructed progressively along with the pile. Each berm would be 20 feet in height. The top of the berm would be 20 feet above the activity layer. As the pile grows in height, the distance between the work surface of the berm and the surrounding community increases, and therefore sound levels will become progressively less.

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Arundel then proffered an additional condition which it would agree to as part of its final approval. The equipment to be used as part of the stockpile relocation will not exceed the noise level set forth in Table III of Mr. Staiano's report on page 10, regardless of the make or model of the equipment.

Noise measurements from the equipment were taken in 1994 to 1995. It was these measurements upon which Mr. Staiano is basing his present report.

Mr. Staiano also indicated that I-95 traffic would possibly generate decibel levels between 50 to 60 at receptors 5 and 6. Staiano acknowledged that the background level of I-95, assuming it to be a 50 to 60 decibel level, could increase the total decibel level being emitted by the equipment being utilized to move the existing stockpiles. He stated that Maryland Route 155 traffic creates noise levels of 55 to 60 dba at receptors 3 and 4 in Susquehanna Hills. The I-95 background noise levels could also add to the Maryland Route 155 noise levels. The only sound measurements Mr. Staiano took in 1995 were of the equipment in the quarry itself. He also took sound measurements of noise levels emanating from Lapidum Road and from Nena Avenue. The location nearest to I-95 had recorded sound measurements of 48 to 58 decibels. Along Lapidum Road sound levels of 40 to 56 dba were recorded. Nena Avenue sound levels were 42 to 56 dba.

Mr. Staiano had taken ambient sound measurements in April of 2004 at two locations adjacent to Lapidum Road, and at a third location in the vicinity of Grace Harbor. Mr. Staiano's findings at the first Lapidum Road location was an ambient noise reading of from 47 to 59 dba, and at Grace Harbor of from 49 to 71 dba.

During the construction of the noise mitigation berm no barrier will be in place to retard or alleviate noise experienced by the receptors. Mr. Staiano stated that this was similar to any other similar construction activity.

Mr. Staiano clarified that his calculations using engine noise assumed engines were running at "high idle".

Mr. Staiano also agreed that dba levels would increase if more equipment were being utilized at the same time. The more equipment, the more noise.

Mr. Staiano stated that his calculations were based on a 800 foot setback from surrounding properties. He did not calculate what the noise levels would be if a 1,000 foot or 1,500 foot setback were used. However, if the depth of the buffer were increased, sound levels would decrease. He acknowledged that the existing earth berm next to Meadowvale could act as an additional sound level mitigation structure. However, he has not evaluated that structure. He has also made no calculation of the effect the removal of the existing stockpile would have on sound levels received by the surrounding communities.

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Arundel, through counsel, made the proffer of an additional condition to which Arundel would agree as part of the final decision. Arundel will agree that the residential properties which are owned by Arundel Industries, including the property known as 1705 Level Road, will not be used for independent residential uses at any time the special exception is in effect and any overburden is being moved. Counsel clarified that independent residential use means that the properties will not be used for living quarters. These properties were identified as Tax Map 44, Parcel 351; Parcel 270; Parcel 275; Parcel 99, Lot 1, and Tax Map 44, Parcel 99, Lot 2.

Lee Cunningham was then offered and accepted as an expert in land planning for the Applicant.

Mr. Cunningham had reviewed transcripts of earlier testimony and had visited and inspected the quarry and surrounding neighborhoods.

He considers the neighborhood of the subject property to be bounded by Interstate 95 on the north and east, Route 155 on the east, and the south heading toward the CSX railroad, and following the CSX railroad and the river on the east.

The Harford County Master Plan shows the quarry location as industrial, with the remainder of the area designed as low intensity.

The quarry itself has an agricultural zoning. The adjacent properties include R1, with some GI zoning by the railroad. R1 zoned property includes an area to the west of the quarry, including the Susquehanna River Hills subdivision.

The Harford County Master Plan shows the property as part of the development envelope, according to Mr. Cunningham. He interpreted this as meaning the County anticipates something other than a typical agricultural use will be made of the property. It is typically an area which the County expects to grow. The quarry itself is shown as having an industrial use classification. The master land use plan speaks of maintaining the quarry uses along with incidental uses. It also suggests that future reclamation is a major concern. The Master Land Use Plan has as a goal the management of the County's mineral resources to provide for current and future production in harmony with the community settings. Current and future production is to be in harmony with its community setting. Furthermore, mining operations are to be designed to protect the environment and address compatibility with surrounding land uses. County regulations are to adequately address buffer zones, minimize impacts, and provide standards and procedures for expansion. The Master Land Use Plan also addresses in more detail restoration plans, which are to be compatible with surrounding land uses and adaptable for alternative land uses. Restoration plans are to be designed to protect the environment. According to Mr. Cunningham, the Harford County Master Land Use Plan recognizes the need to protect Natural Resources.

Mr. Cunningham also indicated that the Master Land Use Plan shows an area on the subject property which is a sensitive species project review area, defined as a general location of documented rare threatened and endangered species.

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Mr. Cunningham defined a special exception as a permitted use, legislatively determined to be appropriate for specific areas if certain conditions can be complied with.

The Harford County Zoning Code allows mineral extraction and processing as a special exception in the AG and R1 District. Mr. Cunningham's opinion is the proposal meets all applicable requirements of the Zoning Code.

Mr. Cunningham stated that the specific requirements of the special exception use have been met. The use must first be approved by the Maryland Department of the Environment. No building or structure is to be located within 100 feet of any road, right-of-way, or adjoining property line. All blasting, extraction, washing, crushing, processing and overburden storage or disposal must occur at least 800 feet from the property line of any parcel within an R1, R2, R3, R4, or RO Zoning classification. All areas in which extraction, washing, crushing, processing, blasting, or other similar activities shall be at least 200 feet from the property line of any parcel with an "AG" or "R" zoning classification. Existing trees and ground cover along public road frontage are to be preserved and maintained, and supplemented as necessary. According to Cunningham, all of these conditions have or will be complied with.

In his opinion the proposed use constitutes a mineral extraction processing operation. Such a use is a special exception in the AG and R1 District. Mr. Cunningham also indicated the Code requires that any special exception comply with all previously established conditions.

Mr. Cunningham then reviewed the Department of Planning and Zoning Staff Report, as it addresses the Limitations, Guides and Standards review required by Code Section 267-9I of the Code. He disagrees with the Staff's findings that buffers in certain areas be increased to 1,000 feet and the height limitation be reduced. Mr. Cunningham can find no justification for such a finding. He believes that, with a few notable exceptions, the stockpile will not be visible because of the existing or proposed tree cover. He bases his opinion upon the line of sight drawings that have previously been discussed. He agrees with the Staff's findings concerning traffic impact and pedestrian considerations. He believes there is sufficient area on-site to establish the Susquehanna Heritage Greenway. He agrees with the Staff that there will be no impact on the orderly growth of the neighborhood or on the neighborhood. According to his review, there will be no odors, dust, gas, smoke, fumes, vibrations, glares or noise any different than are generated by a similar operation in any other location within the County.

He agrees with the Staff's findings concerning facilities for police and fire protection. He agrees with the Staff's findings concerning houses of worship, theaters, schools, and other public places. He sees no significant impact on roads or parks, on the adjacent school, on sewer or on water, either public or private. It will not significantly increase population or impact recreation areas. He believes that the proposal is consistent with the purpose set forth in the Zoning Code. He also agrees with the review and findings of the Department concerning environmental impact, believing there will be no long lasting environmental impact. There are no historic landmarks which have been identified on the site.

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Mr. Cunningham's expert opinion is that the proposed use would have no adverse impacts. He believes it is a typical quarry operation, one that has proposed a comprehensive management plan for dealing with stockpiling of overburden, the mitigation of noise, mitigation of potential fusions and dust, and the mitigation of any visual impacts.

In conclusion, Mr. Cunningham stated he did not see a justification for increasing the setbacks or reducing the height of the berms.

Mr. Cunningham agreed that the Harford County Council, in the adoption of the 2004 Land Use Map, did not increase the size of the industrial designated area on the subject property.

Mr. Cunningham did not do a traffic study of the Lapidum Road – Route 155 intersection. He agreed that the residents of Baylands and Grace Harbor would be affected by the project if they can hear the noise from the quarry. Similarly, they would also be affected by the project if they are able to see some portion of the overburden pile.

Mr. Cunningham acknowledged that Board of Appeals Case No. 409 required a 1,500 foot buffer when Arundel was granted a special exception. That area is shown as "Zoned Buffer Area" on Applicant's Exhibit No. 6.

Mr. Cunningham understood that much of the work involving the movement of the overburden would be done by subcontractors who would be bringing their equipment from off-site. Mr. Cunningham does not believe that the entry onto the subject property by contractors' equipment would create a traffic hazard. He believes this will be a very small number of vehicles.

On redirect, Mr. Cunningham stated that the ambient noise levels as measured and testified to by Mr. Staiano make no difference to his findings. In fact, the relatively high levels of ambient noise makes the area the proposed location a better one for the proposed overburden movement. The point noise source should be subsumed into the total ambient noise levels so that the impact of the point noise source is lessened by the ambient noise levels.

Mr. Cunningham stated that two of the six noise receptors identified by Mr. Staiano are outside of Mr. Cunningham's identified neighborhood of the subject property. Furthermore, three of the eight line of sight projections were outside of the neighborhood of the subject property as identified by Mr. Cunningham.

For the Applicant was recalled Mr. Staiano.

Mr. Staiano had prepared an ambient noise analysis, the results of which were summarized on Exhibit 18, to document existing conditions. Ambient noise has no bearing directly on the design levels for the proposed activity. It was prepared to measure existing conditions.

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Mr. Staiano then described his report on ambient noise. He stated that one his goals was to quantify the noise. He first of all selected representative locations around the proposed stockpiling activities. The first location was identified as Location A at Lapidum Road, and the second was identified as Location B also at Lapidum Road. The third location, identified as Location C, was approximately on the boundary of the Grace Harbor subdivision. Location C was setback from Level Road approximately as far as the nearest residential structure in the Grace Harbor development.

Two types of measurements were taken. Measurements were made at approximately 15 minute intervals, with an observer in attendance and then repeated at the next location and so on. A couple of "iterations" at each location are done. At the same time an unattended noise monitor was left at each location. That unattended noise monitor recorded the levels continuously until the observer returned and retrieved the monitor, approximately 3 days later.

The findings from the two types of measurements were listed on Page 4 of Mr. Staiano's report. (Exhibit 18)

At the location off Lapidum that is closest to I-95, (Location A) an average sound level of 52 was recorded. The range in which the sound occurred approximately 98% of the time was from 47 to 59 dba. Sources were identified as primarily Lapidum Road light vehicles. Mr. Staiano identified the different types of noises which were studied and contributed to his average dba finding. Lapidum Road light vehicles traffic generated sound ranging from 57 to 68 dba. Pool construction activity at one of the single family detached dwelling in the neighborhood produced a decibel reading of from 51 to 60 dba. Construction activity on Level Road produced levels from 49 to 52 dba. Distant traffic, possibly I-95 traffic, was measured at 57 to 53 dba.

Birds chirping were 46 to 62 dba; barking dogs 55-65 dba.

At the location in the woods on the east side of Lapidum Road (Location B), the average sound level was 52 dba. These sounds were generally very similar to those observed at Location A. The range that occurred 98% of the time was 47 to 59 dba. The ambient noise was primarily Lapidum Road light vehicle traffic at a range of 53 to 67 dba.

At the location adjacent to Level Road (Location C), the average sound level was found to be 61 dba. The character of sound was different than that previously measured. The range of all sound levels was 49 to 71 dba over 98% of the time. Heavy truck traffic was measured at 64 to 74 dba. Engine brakes for heavy trucks measured 65 to 77 dba; medium trucks 61 to 70 dba; motorcycles 67 to 75 dba; light vehicles 53 to 66 dba. Aircraft activity was also measured from 67 to 75 dba. Mr. Staiano observed that the mean daytime equivalent sound level measurement is 53 dba; the mean nighttime sound level is 52 dba.

Mr. Staiano explained that temperature and humidity affect the absorption of sound in the air. It is a complex relationship, being a function of the frequency of the sound as well as the temperature and humidity. Wind also affects sound.

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Mr. Staiano explained that ambient levels do not effect Arundel's obligation to achieve proper sound limits. The significance of measuring ambient noise level is simply to understand existing conditions. Arundel has an obligation only to maintain its sound, not ambient noise, at acceptable levels. Mr. Staiano also indicated, however, that background sound levels could cause the intruding sound – the Arundel stockpile sound – to be less perceptible or perhaps possibly even completely imperceptible. Background sound levels tend to mask or dissipate intruding sound levels. Background traffic levels, particularly the traffic noise on Level Road and I-95, would tend to mask the kind of fluctuating sound intrusions the stockpile will have. Increased traffic on I-95 would also make less perceptible the noise to be generated by Arundel.

Under cross-examination, Mr. Staiano stated he was not specifically aware of the times of highest traffic levels on Level Road or on Lapidum Road. He did not do attended sound measurements at either 7:00 a.m. - 9:00 a.m. or from 4:30 p.m. to 6:30 p.m.

Mr. Staiano was asked what the perceived noise level would be if the ambient noise level, primarily heavy truck traffic, at Maryland Route 155 were 74 dba, and the noise level from the overburden stockpile is 63. Mr. Staiano indicated that the sum of 62 and 54 as described would essentially be 74 dba. There would be no significant change in the observed sound level.

Mr. Staiano was asked for the projected sound measurement readings from the proposed stockpile in the absence of the mitigating factor of the proposed berm. For receptor 1 the estimated sound readings would be 66 dba; at location 2-64 dba; at location 3-65 dba; at location 4-63 dba; at location 5-65 dba. At location 7 the projected dba reading, unmitigated, would be 65 dba. Mr. Staiano indicated that the EPA outdoor level goal remains at 55 dba at a residential area.

Mr. Staiano indicated that the estimated noise levels from the construction of the berm itself would be, in the worst possible case, 68 dba.

A written agreement between Arundel and Chesapeake Broadcasting Corporation was then offered and admitted into evidence.

Bruce Wayne King, a Civil Engineer employed by Arundel as a Mine Planner, quantified the overburden which must be moved, and described the process of doing so. After creating a base map, getting all setback information and after having determined the proposed locations to which the overburden would be moved, Mr. King then obtained overburden depth information. King explained the process, using Applicant's Exhibit 11. A series of bore holes were drilled into the overburden. The exhibit describes by letter designation the location of each bore hole. That boring determined the amount of overburden to be removed.

After receiving the boring information from Mr. Neighbours, and after reviewing the site information showing the boundaries of the site, Mr. King determined the location of top rock surface in each of the bore holes. He used a computer program called Land Desk Top Development. It creates a three-dimensional surface in an attempt to depict the location of the rock under the overburden.

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The existing ground is then compared to that rendering, and using a method called grid analysis the computer determines how much overburden is in a particular area and base. In doing the studies for the subject property a 50 foot by 50 foot grid was used. A measurement at the top of the rock surface is taken, and then a measurement at the top of the existing ground is taken, and basically a differential analysis is done between the two. All the sums are added with the resulting overburden figure generated. The results of this analysis are depicted in a chart marked as Applicant's Exhibit 115.

The Exhibit shows that a total of 2.732 million cubic yards represent the amount of overburden in pile number 1 which Arundel plans to move. The amount of overburden for pile 2 contains, according to his calculations, a 4.317 million cubic yards of material.

Mr. King indicated it was difficult to, and in fact he could not, determine the amount of overburden material which is under pile number 1 or pile number 2 and which much be removed. There is no way he could actually determine how much natural material is included in the figures. For pile number 2 a topo had been developed for 1998 so these numbers could be determined. Mr. King described his numbers as having a 10% error factor.

Mr. King discussed the factors which influenced his calculations. He took the material which was in the model itself, and applied a "swell factor". This is because material which is moved becomes larger than when it was first in the ground and taken out of the ground. One is increasing the void ratio in the material, basically putting air into it. A compaction factor is also applied, although the material never gets back to its natural state. A compaction factor of 1.1 was applied by Mr. King, and a swell factor of 1.25 was applied. The result is a larger pile than was initially moved. Weather is also a factor in that some material can retain as much as 15% moisture. Mr. King factored all of these calculations into his numbers, and gave his final results to the decision makers in Arundel.

Mr. King also stated that one of the goals he was working toward was to attempt to isolate the customer haul road from the interior haul roads used by Arundel equipment. Mr. King stated that no numbers were generated of overburden to be moved in the actual mining process.

Mr. King stated that his calculations showed a total of 4,239,000 cubic yards are contained in Mount Aspinall, including the new overburden and the material which existed on-site *in situ*. His numbers also show the total of 2,732,000 cubic yards in Mount Arundel, for a total of 6,971,000 cubic yards to be moved.

Arundel, through counsel, offered into evidence a letter from the Attorney General's Office (Applicant's Exhibit 117) and a Memorandum of Understanding signed by the Assistant Secretary for the Department of Natural Resources and by the President of Arundel. These documents related to the current plan of the Department of Natural Resources and the Arundel Corporation concerning the delineation of the Lower Susquehanna Heritage Greenway through the Arundel property.

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For the Department of Planning and Zoning testified Anthony McClune who summarized the findings of the Department of Planning and Zoning. The subject property is designated as agricultural, low intensity, and industrial employment on Harford County's Land Use Map. The property is zoned R1 for about a third of its area. The remainder is zoned agricultural with some GI zoning along the extreme eastern side of the property adjacent to the Susquehanna River.

The proposed overburden storage area will located in the agricultural and R1 zoning districts. The quarry received prior Board of Appeals approval in Case Nos. 409, 529, 3303 and 4103. Mr. McClune described the present application as one to modify Case No. 4103 by allowing movement of the overburden stockpile as shown on the site plan. The Applicants requested and received a modification to the existing Mining Permit by the Maryland Department of the Environment.

No buildings or structures are proposed with this request; it is only for the movement of overburden. § 267-53E(1)(b) of the Code requires a 100 foot setback be provided from any road right-of-way or adjoining property line.

The Applicants have stated that the three improved properties located to the east of Lapidum Road would no longer be used as dwellings and will be used as offices or similar uses for the quarry operation. The Department believes that if those properties remain as residential units then the 800 foot buffer would be measured from those properties lines. If they are allowed to become part of the quarry operation and used only for those purposes and no longer for dwelling purposes, then the buffer requirement would not be measured from those property lines, but rather from Lapidum Road. Mr. McClune believes at least one of the dwellings may be within 100 feet of the road right-of-way. If that is the case, the Applicant would be required to either request a variance for the use of that structure, or remove the structure.

The Zoning Code requires that all areas used for extraction, washing, crushing, processing, blasting, overburden storage or the disposal of similar activities be at least 800 feet from property lines.

The Applicant proposes an 800 foot buffer from the adjacent R1 zoned property. The Department recommends that buffer be increased to 1,000 feet from Lapidum Road. The Code further requires a 200 foot setback from any adjacent AG or RR zoned classification. This is most pertinent along Maryland Route 155. The Applicant proposes a setback of 300 feet, but the Department is recommending this buffer be increased to 500 feet.

According to McClune, the pertinent Code section also requires existing trees and ground cover along the public road frontage be maintained and supplemented when necessary. Existing mature forest growth is in place between the proposed storage area and Lapidum Road and Route 155.

The Applicant is in compliance with the requirement that an annual certification be submitted to the Department of Planning and Zoning that the conditions contained in previous Board of Appeals cases are being met.

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McClune then addressed the requirements of Harford County Code, § 267-9I.

The Department believes that appropriate buffer and height limitations for the overburden must be established to reduce impacts on neighbors living and working in the area. Increased buffers and reduction of height would serve a public purpose by allowing for proposed overburden to be placed in this location without creating significant impact to adjacent properties above and beyond that which would be expected.

The proposed request does not change the way traffic enters the site. There will be some impact on how truck traffic moves within the site if the modification were granted. The Department does not believe the request will generate a significant volume of additional trips in or out of the site.

The Department believes that buffers should be increased to allow for flexibility for the location of the Lower Susquehanna Heritage Greenway around the facility, and to allow placement to avoid some of the environmental features on the property. A stream exists along the area next to Lapidum Road. An additional buffer in that area would help reduce the impact of noise and dust.

Regarding the orderly growth of the neighborhood and community and fiscal impact, Mr. McClune stated that the quarry has operated for many years, and the mined material is a necessary building material in public and private construction projects. Overburden is part of any quarry operation. Overburden must be moved in order for the mineral extraction activity to continue. The Department sees no adverse impact on the orderly growth of the neighborhood. It should not have an adverse fiscal impact.

Regarding the effects of odors, dust, gas, fumes, smoke, vibration, glare and noise, the Department believes that some dust and noise impact will occur. Conditions on hours of operation and dust control measures must be established to reduce these impacts. The overburdened storage must not be allowed to interfere with public safety communication systems. The Department recommends that the Applicants submit a study from a Radio Frequency Engineer to the Department for review to certify that the overburdened storage area will not interfere with public safety communication.

Regarding the degree to which the development is consistent with generally accepted engineering and planning principles and practices, the Department and the State of Maryland have identified the need to protect and manage mineral resources. The Department has recommended conditions of approval which will allow for some overburden storage and also provide adequate protection for the residents of the area.

The new overburdened storage should have no impact upon the existing school, or other public institutions in the area.

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Regarding the purposes set forth in the Master Plan and related studies, Mr. McClune believes that the proposal is generally in compliance with the goals and objections of the 2004 Master Plan and Land Use Element Plan. The proposed request will allow the quarry to access stone resources in an area already approved for extraction. Addressing § 267-9I considerations concerning environmental impact, effects on sensitive natural features, and opportunities for recreation and open space, Mr. McClune stated that the subject property is shown as a sensitive species project review area. After review no adverse impact is found to rare, threatened or endangered species.

Addressing the preservation of cultural and historic landmarks, Mr. McClune identified two Historic Inventory sites known as Sion Hill and Mount Felix across Maryland Route 155 to the south of the proposed overburdened storage area. The proposed buffer width and height are of concern regarding the views from these sites. Accordingly, the Department recommends that the width of buffers be increased to 500 feet from Maryland Route 155 and the height be reduced to an elevation of 440 feet within 1,000 feet of Maryland Route 155. The Department also recommends that the overall height of the overburden stockpile be reduced to elevation 480 feet. Present elevation proposed is approximately 520 feet.

The Department in addressing these concerns, recommends 11 conditions of approval, as follows:

1. The overburden storage area be located a minimum of 1,000 feet from Lapidum Road and 500 feet from Maryland Route 155.
2. The height of the overburden stockpile shall not exceed an elevation of 440 within 1,000 feet of the right-of-way of Maryland Route 155, with an overall height not to exceed elevation 480. The height of the stockpile will be certified by a licensed surveyor every three months during construction of the stockpile.
3. The construction of the stockpile shall be phased so as to allow the stabilization of vegetation and construction of a sound barrier before soil is placed in each phase.
4. The existing forest within the buffer area shall be maintained.
5. All equipment used in the construction of the stockpile will be operated with manufacturer installed noise suppression devices, and the Applicant shall comply with all applicable State noise limits.
6. Work on the stockpile shall be limited to Monday through Friday, 7:00 a.m. to 5:00 p.m.
7. Appropriate controls shall be placed to reduce dust. The controls shall include watering dirt at the point of excavation, watering the haul road used by the trucks moving the dirt, temporarily halting work when a dust cloud arises.

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8. The stockpile shall be vegetated as soon as possible during construction.
9. That the Applicant shall submit to the Department of Planning and Zoning a study certified by a Radio Frequency Engineer demonstrating that the proposed overburden storage area will not interfere with public safety communication systems.
10. All other conditions in previous cases shall remain in effect.
11. The Applicant shall continue to provide the required Certificate of Compliance pursuant to § 267-53E(1)(f) to the Department of Planning and Zoning.

The Department believes that if these conditions are incorporated in approval adequate protection for the surrounding community will be maintained, and an area for some overburden storage will be allowed on-site. Since this would not be the amount the Applicant is requesting the Department understands some overburden must be removed from the site. However, the Department believes these conditions will allow for continued operation of the quarry and adequate protection of the neighborhood.

Mr. McClune then responded that the Department of Planning and Zoning is not certified or delegated the authority to administer the Surface Mining Act under Maryland law.

Upon questioning, Mr. McClune stated that the west side of the Arundel property is shown on the Master Plan as low intensity. This zone basically provides for residential and neighborhood commercial uses. The allowable density is 1 to 3.5 dwellings per acre. Mr. McClune believes that Susquehanna River Hills has in excess of 100 single family homes primarily on 1/4 to 1/2 acre lots. Mr. McClune is aware that Meadowvale has been annexed and is part of the City of Havre de Grace. If it were not within the City limits, the Meadowvale area would most likely be given a designation of low intensity on the Master Plan. Meadowvale is also principally occupied by single family homes on one-quarter (1/4) to one and one-half (1-1/2) acre lots.

In comparing the 1996 Land Use Plan with the 2004 Land Use Plan, Mr. McClune agreed that the yellow area which was low intensity in the 1996 Plan appears to be identical to the yellow area which is designated as low intensity in the 2004 Plan. Mr. McClune agreed that there was no change with respect to the low intensity area on the westerly side of Arundel's property by the 2004 Land Use Plan.

Mr. McClune was aware that Arundel in late 1995 or early 1996 filed applications for an expanded Mining Permit and for a zoning special exception. No hearings were conducted on that application. By letter dated October 14, 1997, the Department of Planning and Zoning had recommended a wider buffer similar to Meadowvale between the proposed overburden pile and Lapidum Road and Route 155. The Meadowvale buffer is a 1,500 foot buffer between the Meadowvale community and the Arundel property. Mr. McClune stated that ultimately the overburden was placed and allowed to remain within the last 500 feet away from Meadowvale.

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Approximately 1,000 feet of the buffer contains no overburden. The original decision by the Board of Appeals in 1959 required a 1,500 foot buffer which totaled about 100 acres in size. (Case No. 409)

Mr. McClune again reiterated that the Land Use Map, with respect to the low intensity area to the west of the property, did not change in 2004. Mr. McClune again agreed that condition number 1 in Board of Appeals Case No. 409 required a 100 acre buffer whose limits were at least 1,500 feet from the Meadowvale community. Uses within the buffer were limited to R1 uses excluding the quarry use. In 1959 Meadowvale contained 15 or 20 homes. Susquehanna Hills contained approximately 5 homes.

Board of Appeals Case No. 529 (decided in 1961), allowed the expansion of the quarry onto the Langenfelder property. This is shown as "Case No. 529" on the present site plan. The buffer requirement was not changed. Case No. 529 also required Arundel to fill any holes or voids at the completion of operation.

Case No. 3303 involved the allegation that Arundel had caused or dumped or spilled overburden into the buffer. The Board of Appeals found that this had in fact occurred. As a result it was ordered that the height of any such overburden be reduced to 40 feet. The Board also ordered that the height of the improperly placed overburden be reduced to 40 feet in two years or that Arundel cease production.

Case No. 4103 was a request by the Application that the site plan be modified. This resulted in a January 24, 1991 Hearing Examiner's recommended decision. This decision allowed Baker Road to be used as an access road in and out of the quarry.

The site plan in Case No. 3303 shows the stockpile area encroaching into the buffer.

It is Mr. McClune's understanding that the area within the existing 1,500 foot buffer is to be moved. He understands that the area which was reduced to 40 feet in height per Case No. 4103 within the 1,500 foot buffer is not to be moved.

Mr. McClune acknowledged that neither of the current stockpiles – Mount Arundel or Mount Aspinall – are clearly shown on the site plans submitted in previous zoning cases numbers 3303 and 4103. McClune agreed that Council Bill 97-80, enacted in early 1998, established an 800 foot buffer between any quarry activity and R zoned properties. It also established a 200 foot buffer between quarry activity and AG and RR zoned property. The far eastern portion of the property is zoned GI – General Industrial, according to McClune. The height restriction for extraction and processing is 35 feet in this GI district, and applies to structures.

McClune agreed that the Planning and Zoning Department attempts to take into consideration the opinions of municipal corporations with respect to adjacent property. He is aware that the City of Havre de Grace passed Resolution Number 2004-5 opposing any expansion of the quarry. He believes it is appropriate for the Department to understand community concerns.

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Mr. McClune confirmed that the Department recommends the buffer along Lapidum Road be expanded from 800 feet to 1,000 feet. The construction of the stockpile will nevertheless create some impact with regard to noise and dust. The Department has also recommended that the buffer along Route 155 be increased to 500 feet from 300 feet. The Department is concerned about the impact to the Grace Harbor community as well as Mount Sion and Mount Felix. The Applicant is requesting a maximum stockpile elevation of 520 feet. The Department is recommending a maximum stockpile elevation of 480 feet. Within 1,000 feet of Maryland Route 155, the maximum height is recommended to be 440 feet. Mr. McClune agreed that if the pile is constructed as proposed by the Applicant, with the maximum elevation of 520 feet above sea level, it would be approximately 150 feet above ground level. Decreased by 40 feet, as recommended by the Department, it would remain about 110 feet above ground level.

McClune believes that the 1,000 foot and 500 foot buffers would allow for the Lower Susquehanna Heritage Greenway trail, and also allow enough flexibility to keep the trail away from adjacent properties and prevent it from impacting environmental features. The Arundel property is a key property in completing the construction of the overall goals of the trail. The trail will connect the State park to Havre de Grace. It will go at least to the Conowingo Dam from Havre de Grace.

While McClune acknowledged the Master Plan states that Arundel had acquired properties as buffers, including the Green property. Arundel is now actually using a portion of the Green property – Parcel 20 – for its overburden stockpile proposal.

McClune is aware there is relatively heavy motor vehicle traffic and noise adjacent to Susquehanna River Hills and in the Susquehanna River Hills from I-95 and Lapidum Road. He is also aware that Maryland Route 155 is under construction for widening purposes.

Mr. McClune was asked about and discussed the Genstar quarry on Maryland Route 136. It is in a mixed agricultural and residential neighborhood. There is no school in the neighborhood. A church adjoins the quarry on the southwesterly side. The number of units per acre in the Genstar neighborhood is less than in the communities surrounding Arundel. Traffic on Maryland Route 136 is similar to that on Route 155, although there are no major arterial collector roads located to the easterly side as there are at Arundel. Mr. McClune stated that Maryland Route 155 is treated as a gateway to Havre de Grace. Genstar is not adjacent to or near any municipal corporation.

McClune characterized the area around the Scarboro Landfill as a rural area, predominantly agricultural with scattered residences and some minor residential subdivisions on larger lots. Density is much less than Susquehanna River Hills, Grace Harbor or Baylands. Traffic volumes in the area of Scarboro are less than around Arundel.

McClune believes some smaller sand and gravel operations still exist in Harford County, although nothing of the scope or magnitude of Arundel or Genstar.

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McClune agreed there is a substantial amount of residential and agricultural zoned land between Dublin and Whiteford and down the Susquehanna to the Arundel quarry. In none of those areas is there a community the size of Susquehanna Hills or Grace Harbor, although McClune stated that Whiteford has a considerable amount of residential development. These areas are less likely to have the concentration of residential neighbors within a half mile radius as does the Arundel site. Generally speaking the people in those areas are not exposed to the same amount of truck traffic or vehicular traffic. The Department's recommended buffers and height restrictions are needed, and that may mean some overburden must be removed from the site or in areas which remain unmined. He understands alternate methods of disposal of material is available, including trucking and barging off-site.

In discussing hours of operation Mr. McClune acknowledged that a 7:00 a.m. start time will possibly conflict with individuals who sleep later than that in the morning. The retention of existing forest within the buffer will minimize adverse visual impact. The existing forest is very dense within the 1,000 foot buffer and should be maintained. It should continue to thrive as a mature forest, as long as there is no clearing. McClune acknowledged there is a difference in the visual appearance of the forest in the fall and winter when leaves from the trees come down. The increased buffers and reduced height of the berm should help keep the overburden below a height where it would be easily visible, even through winter vegetation.

McClune explained that the application is only a request to store overburden. It does not seek to enlarge the area currently approved for mineral extraction or for the scale houses or the office buildings or the crusher operations or other functions of the quarry. Approval in this case, if granted, will not expand the area which can be utilized for mineral extraction beyond that which has currently been approved in previous Board of Appeals cases.

Mr. McClune and the Department also recommended that all existing conditions established in the previous four cases continue to remain in effect.

Mr. McClune was asked about the Meadowvale buffer. His recollection is that overburden was placed in that buffer between 1,000 feet and 1,500 feet, and then Arundel came back after the fact and asked for approval to allow it to remain there. The Board of Appeals attempted to strike an equitable balance between the impact on the residents and the fact that it was already there and what it would take to move the overburden back out of the area. The Board's solution was to impose a condition that the overburden between 1,000 feet and 1,500 feet be reduced to 40 feet in height.

Mr. McClune was asked if he believed that Mount Arundel, currently immediately north of the 500 foot area where overburden was placed, actually serves as an earthen barrier between the Meadowvale subdivision, the school and the quarry's operation. Mr. McClune believed the existing overburden pile could provide some buffering of the activity within the quarry itself. Mount Arundel is higher than the material within the 1,500 foot buffer, according to Mr. McClune.

Mr. McClune stated that the haul roads on-site would not require future Board of Appeals approval. They may be changed from time to time.

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McClune acknowledged that neither of the existing stockpiles must remain in their current locations. Mr. McClune acknowledged that the present Case requests different relief than the request in 1997. The property is designated as low intensity on the Harford County Master Plan. It is appropriate to have the overburden storage take place in an area classified low intensity. Mineral extraction is permitted as a special exception in areas which are typically designated as low intensity. It is anticipated those uses would be in low, medium and sometimes high intensity designations in the land use plan. The location of the resource itself plays a significant role in where the facilities are placed. Generally the quarries are located where the material was located. Mr. McClune saw little importance to the fact that the location of the storage stockpile is not shown in prior Board of Appeals cases.

The 35 foot height limitation in the design requirements table of the Zoning Code does not apply to the height of the soil stockpiles. It applies to the height of structures. A stockpile is not a structure, in Mr. McClune's opinion.

Mr. McClune acknowledged that Council Bill 97-80 contains no reference to structures. Mr. McClune read the definition of *structure* in the Code:

“A combination of materials to form a construction for use, occupancy, or ornamentation whether installed on, above, or below the surface of the land or water.”

The Department does not believe the Arundel stockpile meets this definition. Mr. McClune's understanding is that the overburden will be soil and rock, with trees and other vegetation planted on top. Mr. McClune is aware of no zoning decision or court case that has defined structure in the context of a rock quarry or sand and gravel quarry.

Mr. McClune stated that he had heard very few complaints about backup alarms from neighbors or others surrounding construction sites. Mr. McClune believes that backup alarms are controlled by Federal and State Regulations and they must operate at certain noise level.

John Blomquist, of 1009 Morris Blvd., testified in opposition. He has lived on Morris Blvd. for 38 years. Mr. Blomquist is President of the River Hills Club, Inc., his neighborhood community association. There are approximately 100 homes in his neighborhood, eighty of those on the south side of I- 95. Twenty or fewer are on the other side of I-95. Many of the people in the neighborhood are in their seventies and eighties, and have lived in the neighborhood for many years.

The community, in Mr. Blomquist's opinion, is firmly opposed to the proposal.

The City Council of Havre de Grace passed a Resolution in opposition of Arundel's proposal.

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Mr. Blomquist related an incident which happened in late 1996 concerning blasting. He was at home, sometime after lunch. There was a large blast and shaking. Mr. Blomquist fell out of bed. It seemed to him that the house was moving; it was like a small earthquake. Mr. Blomquist was angry. He called Mr. Mattingly of Arundel. Mr. Mattingly stated that he would check it out and call Mr. Blomquist back. As a result, Arundel put in place a monitor across the road from Mr. Blomquist.

Mr. Blomquist was then asked about back-up alarms on equipment at the quarry. Depending on the direction of the wind, and whether his windows are open, the back-up alarms are loud enough to wake up Mr. Blomquist. It is very annoying and the neighborhood is affected by the back-up alarms.

As one travels down Lapidum Road one can see all the way through the woods depending on where the sun is located according to Mr. Blomquist. One can see to the location proposed for the pile. Mr. Blomquist has no doubt that he and other residents are going to be able to see through the woods to the pile.

He and other neighbors also have concerns about health, including cancer concerns and concerns about silica. He does not believe that MDE and County officials have done an adequate job of investigating these issues.

Mr. Blomquist feels that the proposal will also negatively impact his property values. He also does not believe that MDE has done an adequate job of protecting the community.

The Protestants next called Wayne Dougherty, Havre de Grace City Councilman.

Mr. Dougherty presented the Havre de Grace City Council's position regarding the Arundel application, and had been authorized to appear in that capacity.

Arundel is not within the City limits. It does not pay City taxes.

Mr. Dougherty identified City Council Resolution 2004-5 as supporting the community and opposing the application for expanding the mining permit of Arundel. The Resolution was passed on May 3, 2004, by a 5-0 vote. The Resolution encourages Arundel to seek no further permits, and to mine within their existing permitted area. It also requests Arundel to create a public trail system around the perimeter of the quarry.

Mr. Dougherty, on behalf of the City, stated that the Arundel proposal is seen as an impact to the gateway to the City, which is Route 155 coming into Havre de Grace. The proposal would impact the view, as well as the neighborhoods of Meadowvale, Grace Harbor, Bay Land Condominiums, and Bay View. The Havre de Grace Resolution was accepted as Protestant's Exhibit 24-A.

Mr. Dougherty also identified prior City of Havre de Grace Resolution, 97-3. That resolution was also against quarry expansion. This resolution was accepted as Exhibit 24-B.

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Mr. Dougherty also identified City of Havre de Grace Resolution 98-1, which set out the City's support of a 1,500 foot setback from mineral extraction and processing operations in Harford County. This Resolution was offered and accepted as Protestant's Exhibit 24-C.

In opposition testified Marie Murray, who has resided at the intersection of Lapidum and Foley Roads since June 1968.

Ms. Murray described the view from her house as quite lovely. She hates to see the view diminished by a 'monstrous pile' of dirt. From her house she can see the three homes across Lapidum which are now owned by Arundel, and then a large span of trees into which the stock pile would intrude.

Ms. Murray gets a good bit of dirt from the quarry. Once her windows are washed it only takes a couple of weeks before they must be washed again. She feels she would also hear more noise from the quarry if the quarry stockpile were moved. In the winter time most of the trees loose their leaves and she has a better view of the proposed site.

In opposition testified April Fritts. Ms. Fritts lives at 1004 Lapidum Road, located three houses south of the intersection of Foley and Lapidum Road. Ms. Fritts identified photographs she had taken demonstrating the view from her home. She feels that dust is a definite issue, as well as the back-up noise, both of which disturb her. She was not aware of the existence of the quarry when she moved into her house. She believes her view would be affected if the proposal is granted. She can see straight through the trees across the road from her house during the winter, she has no doubt that her view would be affected. Her children will be attending Meadowvale Elementary School and she feels they will also be affected.

In opposition testified Phil D'Elia, who resides at 1122 Leslie Road, Havre de Grace. Mr. D'Elia and his family have lived at that property since 1979. His property fronts on Lapidum Road. If Mr. D'Elia looks to the east he can see the 800 foot buffer fence. He can also see traffic on I-95 from his house. The view he sees is beautiful at night. He cannot see any part of the stockpile when he looks to the Arundel property from his house. He hears back-up alarms at his house and does not like it. He also experiences dust coming from the dirt piles which affects the enjoyment of his home. He can see right through the trees when the foliage is off. It is quite bare. He believes he will be able to see the stockpile if it is constructed as proposed. It is going to be obvious to everybody, in his opinion. He believes the stockpile will devalue his property.

In opposition was called Benedict Schwartz, who lives at 2111 Foley Road, Havre de Grace. Mr. Schwartz is not able to see through the trees to the proposed stockpile site in the summertime, but is able to see through them a good part of the year, in the winter and in the autumn. Mr. Schwartz identified a series of photographs of various aspects of the subject property, marked and accepted as Protestants' Exhibit 27-A through 27-U, and as Exhibits 49, 50 and 51.

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These photographs, according to Mr. Schwartz, demonstrate that one can see straight through the canopy and one would be able to see the proposed pile if constructed as planned. All photographs, according to Mr. Schwartz, show the sparse tree cover, that the land slopes down, and that the proposed pile would be visible.

Many times, Mr. Schwartz testified, he has seen dust blowing from the Arundel processing area. This shows up in some of his photographs, he says. Whenever there is a breeze one sees dust blowing. When there is no breeze and the conveyors are running, one also sees dust rising. Mr. Schwartz is against the proposal. He has a major concern regarding health impacts from the quarry. Mr. Schwartz testified that, according to the Maryland Department of Transportation, over 40 million cars circle his community in a year. All of these cars produce emissions. This is part of the environment in which he lives. He also stated that the American Lung Association had declared Harford County to be the fifteenth most ozone polluted county in the U.S. An article documenting this was placed into evidence as Protestant's Exhibit 28.

Mr. Schwartz is concerned that the pile will add significant particulate matter to the air. This which will be harmful, especially to children and senior citizens. The increased emissions from the earth moving equipment, combined with the diesel trucks going to and from the quarry, will increase objectionable emissions in the area. Ms. Schwartz further testified that cancer rates in the neighborhood seem high. The air in the neighborhood is already affected by the highways surrounding it. The emissions to be created by the relocation of the stock pile will increase the potential threat to the neighborhood.

Mr. Schwartz also feels that the proposal will have a negative impact on the City of Havre de Grace, particularly on its gateway down Route 155.

Next was called Allen Philippe. Mr. Philippe was offered and accepted as an expert in the field of Civil Engineering. Mr. Philippe discussed his many years experience as Chairman of the Aberdeen Planning Commission in which he approved plans submitted by developers and other individuals. He estimates he reviewed some 180 site plans over the years. He also had extensive and similar experience in the City of Havre de Grace.

Mr. Philippe examined the Harford County Development Regulation's definition of 'structure'.

Ms. Philippe believed that the stockpile as proposed meets the County's definition of structure. He based his opinion on his observation that the stockpile is a combination of materials to form a construction for use – the use being the storage of material to be stockpiled. It is installed on the surface of the land. It also involves the construction of a berm and sound barrier. This would also be considered a structure. Structures to provide for sediment and erosion control are also proposed. He distinguishes the proposed pile from a pile of dirt which may be on industrial or commercial property as the one proposed by Arundel is carefully engineered and designed to accomplish its purpose.

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He also compared the proposal to a earth dam or an engineered highway fill. He also compared the proposal to rock structures such as jetties, and rip-rap shore protection. All of these are engineered and consist basically of piling material on itself.

Mr. Philippe objects to the proposal for several reasons. The first is that it will visually impact the Route 155 gateway into Havre de Grace. Furthermore, the removal of the existing stockpiles will eliminate the buffering effect which the neighbors in Meadowvale enjoy. He also sees a possible impact from noise and feels there may be a dust impact from the proposal.

Mr. Philippe agreed that no building permit is required for the stockpile.

Next for the Protestants was called Marianne Lisanti, who resides at 1008 Lapidum Road, Havre de Grace. Ms. Lisanti is employed by the Lower Susquehanna Heritage Greenway as Executive Director. The Lower Susquehanna Heritage Greenway is a management entity for the heritage area known as the Lower Susquehanna Heritage Area. The Lower Susquehanna Heritage Greenway has a Board of Directors, consisting of 18 members. Arundel also has a representative on the Board of Directors.

The Lower Susquehanna Heritage Greenway has a management plan which outlines about 40 miles of trails, both on water and land, within the confines of the Greenway. The major portion of the trail has been built. There is, however, no link in the trail through the Arundel property. The trail has many purposes – it links communities in rural neighborhoods by recreation, by culture, and by experience. The trail can be hiked, or ridden by horseback or bike. The water portion can be traversed in a kayak or canoe.

Ms. Lisanti identified an Agreement dated May 2, 1978 between Susquehanna Power, Susquehanna Electric, the State of Maryland and Arundel. (Protestant's Exhibit 32.)

Ms. Lisanti then identified a Stipulation Agreement between Susquehanna Power, Philadelphia Electric, the State of Maryland and the Arundel Corporation, dated November 7, 1980. (Protestant's Exhibit 33.) Ms. Lisanti identified this Agreement as requiring Arundel to make lands available for a trail.

Ms. Lisanti next identified a document between Susquehanna Power, Susquehanna Electric, and the State of Maryland. (Protestant's Exhibit 34.) Attached to that Agreement is a map.

Ms. Lisanti believes there is no agreement among the parties as to the precise location of the trail through Arundel property, although there is agreement as to its general location. This has been as a result of many meetings and discussions among the parties.

On cross-examination, Ms. Lisanti testified that the proposed trail would be about 12 feet wide, constructed of various materials, and graded.

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Next testified Kevin Scott, who lives at 109 Matte Lane, on the north side of I-95 from the quarry. Mr. Scott's children are enrolled at Meadowvale Elementary. He is concerned by the proposal. He is concerned by the dust. He is also concerned about the impact on his children's health. He feels that the proposal will have a negative impact on the economic climate of Havre de Grace. He also feels that the pleasant views from his home will be disrupted.

Next testified Mary H. Klunk, 1104 Lapidum Road. Ms. Klunk has lived at her property for 35 years. When she purchased her property Ms. Klunk was not aware of the quarry. She feels that the movement of the stockpile would increase the noise and vibration which she experiences at her house. She is also very concerned about health issues and potential negative impact of the Arundel proposal. She feels there are a large number of cancer incidents in the neighborhood.

Next testified Steven Klein, who resides at 1008 Morrison Blvd., which is located half way down Lapidum Road from Route 155. Mr. Klein and his family have lived at that property since June 2003.

Mr. Klein is against the proposal. It will be an eye sore and will cause dust. He is also worried about its proximity to Meadowvale Elementary which his son attends. Mr. Klein would not have purchased his property if he had known of the proposal.

Next testified Marvin Kravitz, who has resided at 949 Nena Avenue since 1963.

Dr. Kravitz stated that when the present stockpile was being constructed it was so dusty his wife was not able to put out laundry.

Dr. Kravitz understands the proposal of Arundel is to remove only that earth berm outside of the 1,500 foot buffer next to Meadowvale.

Dr. Kravitz believes that the proposal should be denied. He had to live with Arundel putting in the present overburden pile; he does not want to have to put up with it now removing it. It will continue to be an eye sore, it will continue to generate dust and noise.

Next testified James Brown, III, who has lived at 1000 Lapidum Road, Havre de Grace since 1989. Mr. Brown objects to the request of Arundel. He objects to the dirt and dust which will fill the air from the movement of the overburdened pile. Dust is on his windowsill, it is in his lungs. He is also concerned and annoyed by the noise from trucks and blasting which comes from the quarry. He believes this will increase if the proposal is granted. He also feels that the proposal will affect the aesthetic beauty of the area, and will impact his property values.

At present he does not have a view of the quarry operations. He believes this will change once the proposal is implemented.

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Next testified Frank Calder, who resides at 1007 Lapidum Road. Mr. Calder believes the request should be denied for reasons given by all the other witnesses.

Next for the Protestants testified Volney Ford. Mr. Ford lives in Havre de Grace Heights, on the other side of Route 155 from Meadowvale. Mr. Ford was on the Havre de Grace Planning Commission for about 10 years, acting as Chair for 9 years. He has been a contractor and developer. Mr. Ford believes that the application should be denied. He feels it will impact on the image of Havre de Grace, the quality of life of the citizens, and of its neighbors.

The City of Havre de Grace can only be developed to its northwest quadrant, which is the intersection of I-95 and Route 155. That is the threshold of Havre de Grace. It is the entrance to other subdivisions including Bulle Rock and a planned business park. He and others worked against industrial development of the I-95 and Route 155 interchange, and planned for open space, the preservation of farms in that area, and a low-density office park. He believes that the proposal will now impact that vision in an adverse way, and is contrary to what he and his fellow commissioners of the City of Havre de Grace were attempting through their comprehensive plans. The proposed expansion of Arundel is in direct conflict with the vision and goals of the City of Havre de Grace. Furthermore, the size and massiveness of the proposal is out of scale with the surrounding features in the area.

Mr. Ford feels that the large proposed stockpile will be visible from many directions for long distances which will be undesirable and impede the vision contained in the Havre de Grace Comprehensive Plan. The remaining tree buffer is also, in his opinion, too thin and narrow to control dust and noise year round. The barrier will be totally ineffective in the winter time with no foliage. It will not appear to be a natural structure because of its steep sides and flat top. It will be inherently odd and unnatural looking. The witness asserts it will become a sign that the community is an industrial town. It is what he calls a negative identifier. He says that the gateway along Route 155 has been carefully protected, and this proposal will ruin that.

Mr. Ford feels that a 1,000 foot setback from residential uses and 300 foot setback from agricultural uses is appropriate, as required by Code.

Next testified Donna Fisher, of 902 Leslie Road, Havre de Grace, who objects to the proposal for reasons given by other witnesses.

Next testified Stanley Pugaczewski, who resides at 337 Pentale Drive in Grace Harbor. Mr. Pugaczewski lives with his wife, who has emphysema. He is worried about health issues. His house is impacted by dust. His windows and windowsills do not stay clean.

Next testified Nellie Lasanti, who has resided at 1108 Lapidum Road, Havre de Grace, for 39 years. When she first moved to her property the quarry was small, “. . . nobody bothered about it.”

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Ms. Lasanti believes the application should be denied. She is concerned for health reasons and because of the impact on her home. She also believes she will lose her view. She can see miles of beauty and undisturbed land, calling it one of the most beautiful views in the County. She understands the proposal would block that view.

Next testified Alfred Boehly, who resides at 907 Greenway Court. It was his understanding when he purchased his home about 18 months ago that the existing overburden storage pile would remain. He felt he could live with that. He now believes the application should be denied. Trucks and earthmoving equipment will be on top of the pile, towering over his community. He is concerned about the dust, and the mining will be closer to his property.

Next testified Ms. Gerie Hardy. Ms Hardy has been a resident of Susquehanna River Hills since May 1959. Ms. Hardy has concerns that the Arundel operation will adversely affect her daughter's health. Her daughter, who lives next door to Ms. Hardy, has been diagnosed with pancreatic cancer.

When she first moved to the property she did not see or experience anything from the quarry. Now she sees dust all the time. She is often required to clean her windows and doors outside. She can occasionally, depending on time of the year, see the quarry. She also hears the back-up alarms, occasionally. She says the back-up alarms are acceptable if for a short period of time. However, it is unwelcome if it were to be steady. She does not favor Arundel's application. She feels that this will generate increased dust and noise and air pollution.

Ms. Hardy can, occasionally, hear traffic from I-95. She also occasionally hears traffic traveling Maryland Route 155.

Next testified Dr. Roman Ratych, who resides at 2833 Cross Country Court, Fallston, Maryland. Dr. Ratych is a retired surgeon and physician-scientist.

Dr. Ratych was offered and accepted as an expert in data collection, analysis and presentation including the preparation and presentation of computer-aided design models.

The Protestants offered a binder prepared by Dr. Ratych in support of his opinions and conclusions. (Protestants' Exhibit 48.)

Dr. Ratych explained his findings. He had reviewed Applicant's RK Mapping (Applicant's Exhibit 113), and the Forest Delineation Stand document. He converted both to the same scale, and superimposed one on top of the other. He then prepared a grid with 50 foot increments. He then generated a 3-D model. He then was able to generate a computer model of the overburden stock pile with lines-of-sight. He also prepared still renderings of the 3-D computer model. These are all contained within Protestant's Exhibit 48. Dr. Ratych used a 75 foot height for all trees.

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Dr. Ratych explained that, assuming 100% forest density, one should not see the overburden stock pile from what he has identified as Parcel 3. Dr. Ratych's data was summarized on Table 15, page 114 in his binder.

Dr. Ratych described the view from what is labeled Parcel 13, midway up Lapidum Road. If there is 100% forest density one cannot see the overburden site from Parcel 13. If there were no forest, the overburden site would be seen.

Dr. Ratych then moved to Parcel 27, the northern most part of Lapidum Road. Dr. Ratych concurred with Arundel's findings that one can not see the overburden site from this location.

Dr. Ratych then reviewed the line of sight from property 2388 on Nena Avenue. The existing forest will prevent view of the overburden storage site from property 2388. However, in the absence of a forest one will see the overburden storage site at its toe, being elevation 335 feet.

Dr. Ratych then reviewed the line of sight from Bay Land Condominium. Arundel's witnesses stated that the overburden site will not be visible from this location. Dr. Ratych disagrees. He believes that with forest cover, the proposed stockpile will be seen at an elevation of 415 feet. In the absence of forest cover, it will be seen at 323 feet.

Dr. Ratych summarized his findings by stating that along Arundel's lines of sight 1-7 one will not see the proposed stockpile in the presence of a totally obstructing forest. In the absence of a total obstructing forest, line of sight 1 will visualize the stockpile at its toe elevation, 325 feet. Line of sight 2 will visualize the stockpile at 434 feet. Line of sight 3 will not see the overburden pile. Line of sight 4 will see the overburden pile at elevation 500 feet. Line of sight 5 will see the overburden pile at 380 feet, which is 20 feet lower than the value reported for winter. Line of sight 6 will visualize the stockpile at elevation 395 feet, which is the toe of the overburden site. Line of sight 7 sees the stockpile at elevation 354 feet which is the toe.

On cross-examination, Dr. Ratych stated that the line of sight from Parcel 27 assumed a starting point of 10 feet above the ground level of the property. The line of sight from the Bay Land Condominium was taken from a height of 20 feet above the base elevation of the property.

Next testified Kathryn Fontana, who resides at 4412 Quaker Hills Court.

Ms. Fontana is against the application. She worries about health issues. Her son has an existing breathing condition. She worries about dust also affecting him. She also believes it may have an impact on the value of her home. Being a native of Havre de Grace she is also proud of the area and believes the proposal will adversely impact the image of Havre de Grace.

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Next testified Judy Blomquist, who resides at 1009 Morrison Blvd. Ms. Blomquist has lived at her property for 38 years. Ms. Blomquist opposes Arundel's application. She believes the request is not in compliance with the Harford County Land Use Plan. She believes it will adversely impact the view of the Bay from the I-95 intersection and the beautiful view of the Bay that the people now have. The size of the proposed storage area would dominate the landscape. She also feels it will impact the Lower Susquehanna Heritage Greenway. She also is concerned about noise which will be generated by the construction of the storage pile. She also believes that the berm which has protected Meadowvale should not be disturbed. Creating a new storage pile will pour dust into Susquehanna River Hills. There are children in the neighborhood who have chronic respiratory ailments. She believes the dust in the air would exacerbate these conditions.

Next testified John Polk, who has resided at 908 Lapidum Road since 1972. He is opposed to the request. He believes it will seriously and adversely effect the aesthetic aspects of the community. It will adversely impact the image of Havre de Grace.

Stanley Kollar, offered and accepted as an expert in biological science and ecology, next testified for the Protestants. Approximately 5 years ago Mr. Kollar had walked that part of the subject property in which the stockpile was to be relocated. Based upon his current review of the area and of the photographs in the file, he does not believe the area has changed much since that time. He has also reviewed the site plan and the sediment and erosion control plans in evidence.

In reviewing photographs of a portion of the site Mr. Kollar described the trees as second growth, approximately 40 feet tall. The understory is thick with multiflora rose and Japanese honeysuckle. One can quite clearly see the sky through the trees.

These photographs show a forest that is not densely populated. Mr. Kollar calls it intermediate density. From Maryland Route 155 one can clearly see a pylon which he believes is about 300 feet away from the road and the trees. Most of the trees in this area are beech, with some yellow poplar and maples and a scattering of oak and hickory. The understory is very scant, which is typical of beech type forests. Trees are about 50 feet tall in these photographs.

Mr. Kollar then examined photographs accepted as Protestants' 27-G and H. In Mr. Kollar's opinion the stem density is not great. There is a great deal of open forest floor between the stems. The average age of the trees is probably between 25 and 40 years. There are some small trees that exhibit a little growth. These are called understory trees. The species are the same as he had already described. These trees are 40 feet to 50 feet tall.

Mr. Kollar described the woods as shown in photograph 27-F as having approximately the same stem density. Tulip poplars, oak and maples predominate.

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Mr. Kollar then examined Protestants' Exhibit 27-K, L and M, which are photographs from Level Road. Mr. Kollar described the view as not much different from that of the other photographs. The same species are present. One can see the sky through the canopy, and one can see some distance through the forest through the lower canopy. The density is intermediate. Once the trees reach their mature height their growth tends to slow down.

Mr. Kollar understands that the pylons in the forest were placed by Arundel to designate the toe or base of the proposed stockpile. He understands they are about 300 feet in from Route 155, and about 800 feet from Lapidum Road. Mr. Kollar believes that if a passer-by on either road is able to see the pylons, the passer-by would also be able to see the pile. He believes an observer on or near Lapidum Road near the intersection of Lapidum Road and Morrison Blvd. would be able to see the stockpile.

There is a very sparse understory in the woods. Mr. Kollar believes that one would also be able to see through the Green woods to the stockpile. Once the trees are removed and the stockpile goes in, an observer would be able to see the stockpile.

He does not believe the creation of the stockpile would create a more diverse habitat for wildlife. Over time habitat will change and become better, but will not be a high quality habitat and probably not a habitat as good as your average lawn.

Mr. Kollar is familiar with forest interior dwelling birds (FIDBs), which are migratory birds also called neotropical birds. They spend wintertime in the tropics and move to a temperate zone during the summer. These birds usually require a tract forest of 100 acres or greater in size. Any woods or forest larger than 100 acres is generally considered habitat for forest interior dwelling birds. The Green woods, in his opinion, is habitat for forest interior dwelling birds. The creation of the stockpile would shrink the existing woods to below 100 acres. Consequently, there will be more area along the sides for parasitic birds to invade and compromise the ability of the FIDBs to nest and reproduce. The stockpile will have a negative impact on these birds. This will disturb the ability of the forest to produce oxygen, filter air, improve water quality by virtue of the interception of rain water and control erosion.

Deer and other wildlife live in the area. The reduction of the forest will squeeze these inhabitants. Mr. Kollar believes that the construction by Arundel of a large fence around the property would tend to interfere with migration habits of animals.

The area of the Arundel quarry and adjacent environs is also habitat for the American bald eagle. The elimination of forest would tend to eliminate nesting spots for such birds.

Mr. Kollar has personally observed Map turtles in the Susquehanna River in the area of the Arundel quarry.

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Mr. Kollar would personally find the noise generated by the back-up alarms of vehicles working on and about the storage site to be annoying. The noise would virtually never go away, and will continually be invasive and very objectionable. The neighborhood would be exposed to that noise 12 hours a day for 15 years or so. All environmental effects of the movement of the stockpile would be negative.

On cross-examination, Mr. Kollar stated he had never actually seen a breeding or nesting pair of eagles on the stockpile site. Mr. Kollar also believes that the forest on the Arundel property is somewhat unique as the understory is so open. Most understory plants in Harford are relatively thick. Mr. Kollar also disagrees with Arundel's expert, who opined that the entire existing site lacks vegetative diversity. Mr. Kollar believes that the site has moderate to high diversity in terms of the total number of species. He believes the forest is thriving and rather healthy. He believes transit animal species exist on site, but he also believes species are present which make their home on site as well.

Next was called Katherine White, who resides at 206 Drake Court, Grace Harbor. She believes that the application should be denied. She is concerned about the future mining on the property. She is also concerned about noise and blasting. Ms. White feels that the proposal will adversely effect the aesthetics of the area and harm property values.

Next was called Robert White, who resides at 206 Drake Court, Grace Harbor. Mr. White objects to the proposed special exception. He feels that the proposal will destroy another piece of land to a depth of 300 feet, and the zoning ordinance is no longer relevant.

Next for the Protestants testified Alfred W. Barry, III. Mr. Barry was offered and accepted as an expert in planning and zoning. Mr. Barry is familiar with the site, having driven past it and observed it on a number of occasions. He is also familiar with other areas of Harford County, including the Scarborough Landfill, and the Churchville and Darlington areas.

Mr. Barry described the existing neighborhood with respect to the Arundel quarry and proposed stockpile. The neighborhood has two strong physical barriers, the Susquehanna River and I-95. He would also include those neighborhoods and properties south of Route 155 in his description of the neighborhood. He would include the Grace Harbor community, the two historic properties of Mt. Sion and Mt. Felix, as well as Bulle Rock Parkway, and Meadowvale and Susquehanna River Hills subdivision. He believes the neighborhood is bounded on the north by I-95, Level Road to Bulle Rock Parkway and along Chapel Road back up and south of Grace Harbor. It would also follow the CXS railroad and Susquehanna River.

Mr. Barry is familiar with the Harford County Master Plan of 2004 (Exhibit 104-A) and 1996. He believes the 1996 Master Land Use Plan is similar if not exactly the same as the 2004 Plan. Both plans show an industrial zoned portion to the east of the Arundel property. Both show low intensity to the west of the Arundel property, which includes the balance of the Arundel quarry property and Susquehanna River Hills.

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Mr. Barry was aware that at the time of the 2004 Master Plan enactment Arundel had expressed its desire to expand. Since there was no change between the 1996 and 2004 Master Plan, one could conclude that the decision of the Harford County Council was not to allow the expansion of the industrial zoned activity to the west.

Mr. Barry referred to Table XIV, attached to Council Bill 97-80. This Table contains a height limitation of 35 feet in a General Industrial (GI) District for mining and extraction use. There is no reference as to whether that height limit is to apply to a building or structure. Mr. Barry's opinion is that in the absence of any specificity, one should assume that the 35 foot maximum height applies to the overburden stockpile.

Mr. Barry also states that Table XIII, which relates to the CI District, sets a similar height limit for mining or extraction uses within that district. Mr. Barry feels that if the height limit is applied to the CI District it is important, by extension, to apply it to the R or AG District.

Mr. Barry believes that the location of the proposed stockpile is entirely inconsistent with the low intensity classification which the County Council placed on this property in the Master Plan.

Mr. Barry believes that the proposed stockpile would have a negative impact on the Susquehanna River Hills community and areas south of Route 155. In reviewing the past zoning decisions, he believes an important factor was the desire to have a more natural looking mound.

Mr. Barry further feels that the noise, dust and visual impact to be created by the proposed storage stockpile would negatively impact the surrounding communities. He believes that the required setbacks, which in one case is the minimum required by the Code and the other 150 feet further back, is insufficient. He relies in particular upon the existing 1,500 foot buffer to Meadowvale.

Mr. Barry believes that the existing storage pile serves as a buffer or a barrier between the communities south of it and the Arundel operations.

Mr. Barry described the impact of the request upon the surrounding neighborhood to a similar use if it were conducted at the Genstar location. Mr. Barry felt that the impact at the Arundel location is much greater than would be the impact on the area around Genstar. The two areas are not compatible. Genstar is in an area that is very rural. While some houses are located next to the Genstar quarry, there are none to the extent of the neighborhood surrounding the Arundel operation.

Similarly, the existing Arundel area can not be compared to the area surrounding the Scarborough Landfill. The area around Scarborough is rural in nature, with very limited subdivision activity. There are no major highways similar to Maryland Route 155, nor does the area constitute the gateway to any municipality.

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Mr. Barry believes the area between Dublin and Whiteford is not comparable to the area around the Arundel operation for the same reason as given above, nor are the areas between Churchville and Darlington comparable. Those are very rural areas of the County.

Mr. Barry's recommendation is that the use be setback 1,500 feet from Lapidum Road. This is the minimum necessary to be consistent with the prior zoning decisions. He noted that in 1959 when the 1,500 foot setback was required, there were fewer homes in Meadowvale than at present, and there were only 3 or 4 residents in Susquehanna River Hills. He also recommends that the setback from Maryland Route 155 be increased to 1,000 feet. This is 500 feet more than the recommendation of the Department of Planning and Zoning. The basis for his recommendation is that because of the open nature of the property from the south, along the frontage of Arundel on Route 155, a smaller setback is justified than along Lapidum Road.

The height of the overburden pile should be kept below the tree line and be designed in a natural way. He believes that the height of the stockpile should be no greater than 70 feet, which is the height of the existing trees. Mr. Barry also believes that 7:00 a.m. is too early to operate heavy equipment. He believes 8:00 a.m. should be the starting time for any visible activity on the stockpile. Mr. Barry also recommends a condition that reaffirms that mining shall not extend beyond that allowed by previous cases.

On cross-examination, Mr. Barry acknowledged that the Department of Planning and Zoning Staff Report does not agree that Harford County Council's intent in the 2004 Master Plan was to restrict Arundel's placement of its stockpile.

For the Protestants testified Dale Richard Bowlus, who resides at 909 Leslie Road, Havre de Grace, Maryland. Mr. Bowlus is concerned about health issues raised by the quarry expansion, particularly about exposure to particulate matter. He has noticed increased amounts of dust in the air and on his yard. He believes this area to be one of the dustiest place he has ever lived, after having lived in a number of places around Harford County. He is constantly changing filters in his house. He believes the particulate matter in the air will increase when the barrier between the quarry and the surrounding communities is removed. There are a lot of new homes that have now been built against the barrier.

The stockpiles will be moved closer to his home if the approval is granted. This would cause more noise, and more disruption of material that has been in place for a long time. This will also increase truck traffic in the area. Mr. Bowlus is concerned about well water and potential contamination. He believes that as large amounts of soil are moved things tend to be changed underground which can disrupt the flow of ground water.

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He is also concerned about the removal of trees which will effect natural habitat of the area. He questions whether the deer population will go, and what will happen to the bird population. Mr. Bowlus believes there were bald eagle nests located north of the property. He finds the "large scar" which faces the northeast as one enters the County to be objectionable. He says there is much denuded land on the existing mound which is unattractive. He has also been on the Susquehanna and witnessed clouds of dust coming up the river. It is seen as a "fog" coming across the water.

Mr. Bowlus is concerned about the limited amount of data from 1996 to 1997 that was acquired from air monitoring. He believes this is not a sufficient sampling. He also believes the quarry expansion will tend to affect his property value.

Mr. Bowlus said that during those times it gets very dusty in the area. He can feel the dust in his throat, in his voice and in his lungs, especially when he is trying to work outside.

The witness has also replaced the windshield of his car several times in the last years from following trucks. He averages about three windshields a year going down Route 155 onto I-95. He sees debris falling from trucks. This causes him concerns for the safety of people living in the area. He also is concerned by the disruption to the Greenway. If the relief requested were granted Mr. Bowlus feels he and his wife would move from the area.

Upon cross-examination, Mr. Bowlus indicated his belief that the term will no longer remain in the area that is now buffered. The entire south side berm will be removed.

Next testified Kenneth Darney, who resides at 217 Decoy Drive, Havre de Grace, part of the Grace Harbor subdivision. Mr. Darney has lived at that location since July 1995 with his wife and two children.

Mr. Darney's major concerns about the application are health related, given that he has two small children who were born and raised in the neighborhood. He believes that moving such a large amount of overburden will move an increased amount of dust and matter into the air. He believes a more in-depth study of air quality should be required of Arundel.

Next for the Applicant was called John Wilson, who is employed as a Program Manager for the Resource Planning Program, Maryland Department of Natural Resources.

Mr. Wilson stated that the idea of creating a Heritage Area along the Lower Susquehanna came from within his Department. The Department believes that the area had a lot of natural cultural and recreational resources that could be linked via trails to create a unique tourist area.

The Lower Susquehanna Heritage Greenway Group is not a State agency. Mr. Wilson, however, is familiar with the agreements involving Susquehanna Power Company (k/n/a Exelon), the Department of Natural Resources, and the Arundel Corporation. He is familiar with the most recent agreement, dated November 1987.

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In describing his understanding of that agreement, Mr. Wilson believes that Arundel was to make an area available for a trail, around the perimeter of the property. It is to be in a location that is mutually agreed upon by the three parties to the agreement, which are the power company, the Department of Natural Resources and the Arundel Corporation. Mr. Wilson has worked on getting a trail location around the Arundel property, beginning in approximately August 2004. The Department has had a series of meetings since that time. The Department has been meeting with the Executive Director of the Lower Susquehanna Heritage Greenway, with some of their Board members, and the Maryland Department of the Environment. The Arundel Corporation has had representatives at those meetings. Department of Natural Resources personnel have been at those meetings. Mr. Wilson's understanding is that a consensus concerning the trail was reached subsequent to a meeting in May 2005. He now understands that was not the case. He believes that the Heritage Greenway representatives feel no agreement has been reached.

The Department of Natural Resources has entered into an agreement with Exelon and Arundel (Exhibit 118) that provides for a trail alignment. That trail alignment is not impacted by the proposed overburden pile.

Two of Mr. Wilson's staff verified the potential alignment. These field personnel walked the alignment with hand-held global positioning systems. The information was brought back to the office and applied to an aerial photograph. This alignment, reduced to paper, was agreed upon at a May 9, 2005 meeting. (Exhibit A to Exhibit 118.) At that meeting was a representative of Arundel, representatives of Mr. Wilson and the Department of Natural Resources, a representative of Exelon Corporation, and representatives from the Lower Susquehanna Greenway.

Mr. Wilson subsequently obtained a drawing from the Lower Susquehanna Greenway, (Exhibit 38). This was first seen by Mr. Wilson after he initially entered into the Memorandum of Understanding. Exhibit 38 was identified by Mr. Wilson as a Conceptual Map prepared by the Lower Susquehanna Heritage Greenway folks. That map was never sent to Mr. Wilson. This map varied somewhat from the "consensus" map previously identified by Mr. Wilson. There are no major differences. He sees no difference with respect to the location of the spoil piles and trail. Mr. Wilson believes that his consensus trail is more accurate as it was verified by global positioning points. The Lower Susquehanna Heritage Greenway Group has never indicated differences to the Department of Natural Resources. They have not responded to the Department.

The Department is satisfied the trail is located in an appropriate location as it pertains to the spoils pile. There is to be a formal agreement as recited in the Memorandum. It is Mr. Wilson's understanding, and the Department's understanding, that once all details are finalized, a formal amendment to the 1987 Agreement would be drafted to add the new agreed upon trail alignment. The Lower Susquehanna Heritage Group could be a party, although they were not a party to the 1987 Agreement.

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Next for the Applicants testified Joseph W. Hopkins, III, who identified himself as a Cultural Resources Specialist. His firm provides services in historic preservation, cultural resources studies, providing services to people who are required to identify archeological resources or architectural resources that might be effected by projects which are subject to those regulations. Mr. Hopkins was offered and accepted as an expert archeologist and historic structure consultant.

Dr. Hopkins was asked to define an historic structure. Dr. Hopkins responded by stating that a historic structure is defined by criteria established by the National Historic Preservation Act. Historic structure is defined in that Act. In Maryland, the state office which regulates historical structures is the Maryland Historical Trust. The Maryland Historical Trust is the agency with which historic structures are recorded and listed and is the repository for studies which have been performed to show compliance with Federal regulations.

Dr. Hopkins is familiar with the sites known as Sion Hill and Mt. Felix. He has visited these sites. Sion Hill is recorded as a National Historic Landmark which is one of the higher categories of historic structures. The State of Maryland believes Mt. Felix would be eligible for the National Register, but no formal request for determination of eligibility has been made.

Dr. Hopkins had been asked by Arundel to determine if it was in compliance with all regulations affecting this project, and to determine if potential adverse impacts to the two historic properties mentioned exist.

Dr. Hopkins then identified Applicant's Exhibit 121, which is a July 27th letter from the Maryland Department of Housing and Community Development. The letter states that Sion Hill and Mt. Felix are significant. It is the opinion of the Maryland Historical Trust that the proposed undertaking will have no adverse effect on these property.

Dr. Hopkins stated that the views from both Sion Hill and Mt. Felix towards the wooded project site are not factors that contribute to the eligibility for the National Register.

Upon cross-examination, Dr. Hopkins stated that Sion Hill is mainly known because of its relationship with the Rogers family. Accordingly, it is associated with a person of importance. Also, the buildings on-site are notable architectural structures. For both reasons the property would qualify for the National Register. Mt. Felix is listed in the Maryland Inventory of Historic Properties.

Dr. Hopkins testified that, based on the lines of sight prepared by Frederick Ward Associates, Inc., he is of the opinion that the Arundel proposal would have no visual impact upon either of the properties under discussion. Dr. Hopkins believes that the viewshed is important as an observer's experience would be diminished if there were commercial development or a light source directly beside the property. As an example, an interstate highway directly in front of a historic property is normally considered to be an adverse effect. Dr. Hopkins stated that the existing telephone poles, road and traffic in front of Mt. Felix have an impact.

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Dr. Hopkins sees no reason for an increased buffer and reduced height of the proposed stockpile as recommended by the Harford County Department of Planning and Zoning, with respect to Sion Hill and Mt. Felix. He believes that things will simply not be visible from either structure, and the viewshed will not be adversely affected. He does not believe reduced height or increased setback would have any effect on the existing viewshed.

For the Applicant was recalled Harald B. Johnsson, III. Mr. Johnsson rejected the suggestion that the only reason Arundel was requesting permission to relocate the overburden is to save money. He stated that of the alternatives, trucking the material out through the community would cause significant impact on the community. Those trucks hauling overburden will make noise, will create emissions, and will significantly impact the community. Mr. Johnsson estimated that it would take approximately 550,000 truck trips of dirt going out Baker Avenue onto Route 155 in order to move the stock pile off-site. It would take several years to make such a move.

On cross-examination, Mr. Johnsson stated that barging material off-site had been examined, but is not feasible. Arundel has approximately 20 barges in its fleet and six tug boats. Arundel also contracts with other tug boats and barges. Mr. Johnsson noted there will be no truck or dust problems if the overburden material were put back into the pit. However, Arundel continues to mine in the pit at the present time.

Mr. Johnsson explained why barging is not feasible. First of all, an infrastructure is necessary in order to load the material onto the barges. At present, upper and lower docks are engaged loading stone. Next, navigable water is needed at the site somewhere around the Bay where the material could be unloaded. The material would then be trucked to whatever disposal site is used. A current shortage of barges and tug boats exacerbates this problem.

A barge holds from 2,000 to 6,000 tons, which is roughly 4,000 cubic yards. Mr. Johnsson has never seen a big dirt job served by a barge. He does not recall ever shipping dirt out of the Arundel site by barge.

Next for the Applicant testified Kevin Small. Mr. Small previously testified as an expert landscape architect.

Mr. Small was asked to describe the colors of the stockpile in its various stages. Mr. Small responded by stating that bare earth is basically various shades of brown. As vegetated and stabilized with ground cover the color will change to green within two weeks after initial seeding. Once the phase is finished and forested with trees the stockpile would appear in varying shades of greens and browns depending upon the time of the year. Mr. Small opined that the stockpile would visually blend into the woods.

Mr. Small reviewed Protestant's Exhibit 27-A through U. Mr. Small indicated he had taken a photograph from the same location as Protestant's Exhibit 27-D. A large orange pylon showed in 27-D. That pylon is not visible in Mr. Small's photograph. (Applicant's Exhibit 124-B.)

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Mr. Small also took a photograph in the same location as Protestant's Exhibit 27-I. In Mr. Small's photograph (Applicant's Exhibit 124-A), the orange pylon is not visible, although it was visible in Protestant's Exhibit 27-I.

Mr. Small does not agree the stockpile will have an unnatural or geometric shape. Mr. Small described the shape of the proposed pile. He said it will be sloped. The footprint of the burden is not going to be rectangular. The lifts themselves will be undulating. The area on top cannot be perfectly flat. It has to be able to take water and to distribute water off to the side. The dirt will not conform to sharp angles. The dirt will be rounded.

Mr. Small does not believe it will be difficult to vegetate the relocated stockpile. Mr. Small stated that Arundel will fertilize the surface layer of the stockpile to encourage the survival of plants.

The Applicants next called Michael A. Staiano. Mr. Staiano had previously testified as an expert in noise analysis.

Mr. Staiano had performed an analysis in order to determine if the noise from back-up alarms could be reduced. Arundel had acquired an ambient-noise sensing, variable-output alarm referred to by Mr. Staiano in his report (Applicant's Exhibit 96). This incorporates a microphone which measures sound from existing noise sources, and then adjusts the volume of the alarm signal to be sufficiently high above the existing ambient sound to provide an adequate warning. In this way the alarm provides only enough signal to provide a warning. This alarm was fitted to a fork lift truck which has been in service for some weeks at Arundel. Measurements were then performed. The existing ambient sound and the sound levels which were generated by the alarm were measured. By means of a loud speaker system driven by Mr. Staiano's instrumentation, background sound was artificially raised in various steps up to the maximum which he was able to produce. The response of the alarm to the elevated background noise was then measured.

Mr. Staiano's findings were that, with a background noise of 54 decibels, the measurement of the alarm at 4 feet from the alarm was 90 decibels. When a background sound level of 80 decibels was present (in the absence of the alarm) the measurement at 4 feet from the alarm was 95 decibels. When the background sound level of 89 was present, the sound level produced by the alarm was 100 decibels at 4 feet. When the maximum background sound level of 98 decibels was present, the alarm sound level from the alarm was 107 decibels.

Mr. Staiano findings were, based on this data, that the existing ambient sound levels cause the back-up alarm to fluctuate. He then gave sound levels at 100 feet distance, instead of the 4 feet distance upon which his original studies were predicated. At the lowest background sound level, the 100 feet sound level for the back-up alarm is 82 decibels. At the 80 decibel background noise level, the 100 feet sound level for the measurement of the alarm corresponds to 67 decibels. With the background level of 89 decibels, the 100 feet sound level reading of the alarm corresponds to 72 decibels. Finally, with a 98 decibel background sound level, the 100 feet sound level measurement corresponds to 79 decibels.

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Mr. Staiano concluded that with a variable output back-up alarm the noise levels are anywhere from 2 - 19 decibels lower than are generated by a non-variable output back-up alarm.

According to Mr. Staiano, there is a much reduced likelihood that the back-up alarms will be either audible or of sufficient audibility to be annoying with the variable alarms. Some people will still find the noise objectionable. However, the variable signal alarm complies with the law and at the same time provides the least provocation possible.

At the end of Mr. Staiano's testimony the Applicant's attorney proffered additional conditions of approval.

- That the equipment that is used in relocating the stockpile would utilize the variable output, ambient noise sensing back-up alarm of the type that was described by Mr. Staiano.
- That the Applicant shall undertake periodic ambient air testing to determine impacts from the stockpile location.
- This testing shall be accomplished in accordance with the Maryland Department of the Environment or MDE.
- Testing will be performed on a bi-annual basis at monitoring stations recommended by MDE.
- Interested citizens will be provided an opportunity to provide input regarding the monitoring station locations, the time of the year, and duration for each testing interval.
- Testing will be performed for PM 10, PM 2.5, and a silica component.
- Results from all such tests will be filed with the Harford County Department of Planning and Zoning, the Harford County Department of Health, and made available for public inspection.

Applicant's Exhibit 128 was accepted which itemized these proposed acceptable conditions.

Next testified Benedict Schwartz who identified additional photographs.

This concluded testimony.

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DISCUSSION AND FINDINGS OF FACT

Height Restriction under Development Regulations.

Protestants assert that the overburden storage stockpile should be limited to a height of 35 feet, which is the maximum height allowed by the Harford County Code for a Natural Resources use in the applicable districts. (See Table II, Design Requirements for Specific Uses – Agricultural District; and Table IV, Urban Design Requirements for Specific Uses in the R1 District.)

Protestants also present testimony that the proposed stockpile would be, in fact, a *structure*, defined by Harford County Zoning Code as;

“a combination of materials to form a construction for use, occupancy or ornamentation, whether installed on, above or below the surface of land or water.”

Despite Protestants assertion it is impossible to stretch the definition of “structure” to the length desired. The proposed stockpile is, after all, nothing more than a pile of dirt and rock fragments. Admittedly, the construction of the mound is subject to certain engineering requirements for sediment and storm water control. However, no building permit is required and, perhaps most tellingly, the existing stockpiles are themselves well in excess of 35 feet in height, have never apparently been subject to a zoning violation notice, and the Applicant has not been found to be in violation because of their height. Furthermore, Mr. McClune acknowledges that the 35 foot height limitation in the design requirement tables of the Code do not apply to the height of these stockpiles. A stockpile is not a structure in Mr. McClune’s opinion, nor is he aware of any zoning decision or court case which would define the stockpile as proposed by the Applicant as a structure. Furthermore, the Protestants have supplied no authority in support of this argument.

Accordingly, the proposed stockpile cannot be considered a structure and it is found the Natural Resources height limitation of the Code does not apply.

Property Values.

The Applicant presented evidence through its expert witness David January that the present operation of the quarry has not negatively impacted property appreciation in the surrounding areas. Based on his studies of the surrounding properties and of non-impacted properties, Mr. January concluded that the proposal will not have an adverse impact on property values in the surrounding areas.

In opposition, Protestants elicited testimony from many of the neighbors who expressed the fear that the proposal would adversely impact their property values. This fear was, perhaps, most clearly expressed by the residents of Lapidum Road who, for the most part, have had little view of the present quarry operations but who would be potentially impacted by an expansion of the stockpile toward their location.

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Nevertheless, while the concerns of the neighbors are strongly expressed and no doubt strongly held, no persuasive evidence was presented to justify a finding of adverse impact on property values. It is important, as discussed above, to understand that the proposal will have certain impacts on the community. It will not be impact free, nor need it be impact free. Simply expressing, and even adopting a finding of, impact is not sufficient to support a denial.

It is further found that even potential impacts on property values can be mitigated if not eliminated by the imposition of conditions. The creation and maintenance of adequate visual barriers surrounding the proposed stockpile, together with conditions on operations to control noise, hours of operation, and air emissions, all as more fully described below, will reduce if not eliminate the potential of negative impacts on property value.

Accordingly, there is no persuasive evidence of adverse impact on property values if the proposed special exception were granted. There is further found to be no showing of adverse impact on property values above and beyond that normally expected for such a use. Furthermore, the imposition of the conditions discussed below will reduce if not eliminate the possibility of such an impact.

Noise Impact.

Noise is identified as a major issue by the neighbors, for good reason. No one wishes to be impacted, for 8 or 9 hours a day, by the racket of heavy machinery, dump truck bodies loading and unloading material, the working of front-end loaders and bulldozers, the constant yammer of back-up alarms, the voices of workers on and about the stockpile.

Surprisingly, while these are obviously well known and well feared impacts of almost any major construction activity, the Applicant apparently failed to take noise impact into account in their original design of the stockpile. Mr. Staiano stated that after he performed his noise tests he came to the conclusion that the stockpile as originally designed would allow noise to be generated in excess of Maryland State Noise Limits. Mr. Staiano then designed a process by which each 'lift' of the stockpile would be first screened by overburden material in the form of a 20 foot tall berm surrounding the area of the lift which would then be tilled with stockpile material. This noise suppression berm would diminish the impact of the noise from the equipment on the surrounding residents. (Of course, during the time the berm itself was being constructed neighbors would be fully exposed to the noise of the equipment. This was justified as being part of a normal construction activity to which applicable noise limitations do not apply.)

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Further, it was only after some questioning of these findings did Mr. Staiano reappear at a subsequent hearing and recommend that the back-up alarms be variable – output, ambient noise sensing models. In essence, these alarms would generate alarms after taking into account ambient background noise. In theory, at least, the variable - output alarm would be only sufficient to overcome the background noise, and accordingly would serve its purpose of providing a warning to workers in the area by the use of a somewhat less noisy alarm. By using a variable – output, ambient noise sensing model, Mr. Staiano testified that background levels should be reduced below traditional alarm levels by up to 10 decibels.

While Mr. Staiano's recommendation is commendable and will be incorporated as a condition of this decision, the potential noise which will be generated by the vehicles used to move, dump, locate, and create the storage mound is of great concern. Evidence indicates that many thousands of trips will be necessary to create the storage pile. Bulldozers and backhoes will be used on top of the mound to move material. Each of these vehicles will, presumably, be equipped with a back-up alarm which, if they are to serve their purpose, must be shrill enough to provide a warning to workers on-site. Even if within Maryland State Noise Limits, the noise will be of sufficient duration and intensity, no doubt, to be annoying to the neighbors if heard. Exacerbating the potential impact of noise is the fact that this is not a typical surface mining operation whereby an operator goes *down* in the course of mining. The very process of mining in that type of operation tends to mitigate over time the noise impact on surrounding residents. However, Arundel proposes a use which will go *up*. The equipment may become more and more visible, and certainly resulting noise will tend to have more of a potential impact on the surrounding residents as the pile increases in size. Simply staying within Maryland State noise limits is not sufficient to protect the neighboring residents. Furthermore, this is certainly not the type of impact one would normally expect from a natural resources uses, particularly a surface mining operation. As explained above, the impact is just the opposite from what would be the typical, expected impact.

Nevertheless, noise is a potential impact which can be mitigated by the imposition of proper conditions, including those proposed by Mr. Staiano and the Applicant. Further conditions, to be more fully discussed below, will include limitation of the size of the height of the stockpile and substantial setbacks, so as to limit the exposure of surrounding residents to noise, maintenance and potential improvement of the surrounding forest barriers, and limitation of hours of operation.

While noise has the potential to impact the lives of the residents surrounding the Arundel property it is to some degree an inevitable part of the operation and its resulting impacts. Nevertheless, the neighbors must be sheltered, to the extent possible, from the potential of having the constant, daily intrusion of unwanted high levels of noise. A reduction in the size of the stockpile, substantial setbacks, and the maintenance of the existing and perhaps improved forest area will tend to provide those protections and will reduce the impact to no more than that as would be generated by a similar surface mining quarry at any other location within the zone.

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Sediment, Surface Water Control and Endangered Species.

The Applicant presented a convincing case, and it is found, that with adequate sediment and erosion control measures, its proposal will generate no impact on surrounding properties or the Susquehanna River from sediment and/or surface water run-off.

Furthermore, no evidence of any endangered or threatened species on the subject property was presented. As a result, it is found that no such species will be threatened by the proposed development.

Visual Impact.

On the Arundel property are presently situated two stockpiles, both of which will be moved into the proposed stockpile. The southerly stockpile (Mount Arundel), has an elevation of about 452 feet, or approximately 152 feet above ground level. The northerly existing stockpile (Mount Aspinall), has a maximum elevation of approximately 340 feet, and is about 100 feet above existing ground level. (See Testimony of Michael Hall.) It is not inaccurate to say that both Mount Aspinall and Mount Arundel dominate the area. They are visible from much of the surrounding countryside. If there were any doubt about this one only need to review photographs of the area submitted by the Protestants, most specifically Protestant's Exhibit 27A-U.

The present stockpiles are, without question, a dominating presence in the area. While not fully visible from every direction, justifiable fear is expressed by many of the witnesses, including Volney Ford, that a stockpile similar in size to those present, but closer to Level Road, will have a significantly adverse impact on the image which the City of Havre de Grace is attempting to project. Certainly, this is a legitimate reason for concern as Level Road has been designated as a gateway to Havre de Grace. It is noted that the City of Havre de Grace has expanded in recent years and is undergoing a revitalization which has a potential of benefitting not only the City but Harford County and the region as a whole. A concern that the Arundel proposal would impact, however negatively, that revitalization is legitimate and one which must be taken into account.

The height for the existing stockpiles are of interest for another reason – the proposed stockpile is to be at a final elevation of 480 feet, (see testimony of Kevin Small), which is almost 30 feet higher than the elevation of Mount Arundel at the time of the hearing. More important is the elevation above actual ground level. Mount Arundel is approximately 152 feet above ground level and Mount Aspinall was (again at the time of the hearing), about 100 feet above ground level. The proposed stockpile at its highest elevation would be as much as 160 feet above ground level. Accordingly, as significant as is the visual impact of the existing stockpiles, the potential impact of the proposed stockpile will be substantially greater, particularly given its more intimate relationship with both Lapidum and Level Roads.

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One of the more fascinating areas of disagreement between the parties involved the question of exactly how far one can see into the woods surrounding the proposed stockpile. The Applicants, in an admittedly unscientific way, basically sent someone to walk into the woods and then made observations as to how far that person could be seen from the surrounding roads. The Protestants, on the other hand, indicated they could clearly identify landmarks within the woods at the point where the proposed stockpile would begin. Neither testimony was particularly persuasive.

More helpful was the testimony of Dr. Roman Ratych who testified for the Protestants.

Dr. Ratych, subject to heavy and continuing objection by the Applicant, explained quite convincingly his process of preparing line of sight drawings, showing the view one would have of the stockpile from various locations around it. Dr. Ratych found, simply put, that in the presence of a 'totally obstructing forest' the stockpile cannot be seen from any location studied, except Bayland Condominiums. However, the stockpile will be visualized from almost every location in the absence of a totally obstructing forest.

Unfortunately for the Applicant, the testimony and evidence demonstrates that the forest density on-site will not be totally obstructing. In making this finding the testimony of Stanley Kollar is relied upon in part. Mr. Kollar, who has some historical experience at the site, having visited it some years ago, was coherent and credible in his testimony concerning the type of forest which is in existence around the location of the proposed stockpile. Mr. Kollar stated that the stem density of the existing trees is not great. There is much open forest. The tree growth is between 25 and 40 years of age. One can see through the canopy; one can see some distance through the forest through the lower canopy. He believes that an observer on Lapidum Road near the intersection of Lapidum and Morrison Road would see the stockpile. He also believes that one would be able to see through at Greenwoods, from Level Road, to the stockpile. It is also a fact that most of the trees in the area will lose their leaves in the wintertime. This fact was ignored by the Applicant in the presentation of its case.

It is accordingly found, based on the testimony of Dr. Ratych and Mr. Kollar, that the stockpile, in the location as proposed, will be visible from both Lapidum and Level Road, at least partially, and certainly for a significant portion of the year. This will tend to have an inhibiting impact on the development of Havre de Grace, and is an impact not necessarily related to the operation of a surface mining quarry regardless of its location within the zone. Furthermore, the Applicants appear to ignore any possibility that the forest would suffer deterioration over time, such as could be caused by a forest fire or blight.

Furthermore, the attempted argument of the Applicants that the proposed stockpile will have a "natural look" is rejected. This will be a pile of material which was, as admitted by the Applicant, designed solely to absorb all current and future overburden. There was no aesthetic consideration in mind, no such consideration was articulated, and none is found. It is, simply, a pile of rock and dirt, having a footprint sufficient to take care of Arundel's future needs. It is in fact man made, and it will appear to be man made, at least until many years in the future when nature has reclaimed it.

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Arundel asserts it has reduced the height of the stockpile somewhat so as to not be visible from adjoining properties. It is difficult to reconcile this statement or the other statements of Arundel's agents who testified that the stockpile is designed simply to meet the present and future overburden storage requirements of Arundel. In any event, it is clear that the location and design of the stockpile is to meet Arundel's purposes, certainly not to benefit, or to take into account in any significant degree, the concerns of the neighbors or the City of Havre de Grace.

Such a finding, however, can be mitigated by the imposition of conditions which will include maintenance of appropriate setbacks on Lapidum and Level Road, reduction in the height of the stockpile above ground level as proposed by the Applicants, and the mandating of certain practices to be undertaken by Arundel to maintain and improve existing forest cover. With adequate conditions it is found that the potential visual and aesthetic intrusion of the proposed use will not be adverse, and certainly not worse than what one would normally expect of a surface mining quarry operation at some other location in the zone.

Greenway Trail.

There was extensive discussion and testimony concerning the proposed location of the Greenway Trail within the Arundel property. No doubt, the Greenway Trail is and will be an important Harford County resource, the purpose of which is to celebrate, and inform citizens of, the historic and present nature of the Susquehanna River corridor within Harford County. Nevertheless, there was an abundance of testimony that the Greenway Trail will be adequately routed through the subject property, and that the proposal will have no significant impact upon that route. The property is, after all, owned by Arundel, and to the extent it cooperates in providing its property as a linkage to the trail it is acting in a public service capacity, which is to be commended. There is no real or even credibly suggested evidence that the proposed special exception will have an impact on that link. This finding is also based upon the testimony of the Maryland Department of Natural Resources that the Department is satisfied with the trail, as proposed, it is to be located in an appropriate location upon the subject property.

Historic Site Impact.

There is no dispute that two historic sites are in close proximity to the subject property. Those sites are known as Sion Hill and Mount Felix, both of which are located across Level Road from the area in which the proposed stockpile is to be located. Sion Hill is a National Historic Landmark. Mount Felix, according to the Applicant's witness Joseph Hopkins, is eligible for the National Register.

The testimony of Dr. Hopkins is one of the more puzzling aspects of the case. Dr. Hopkins, offered and accepted as an expert archeologist and historic structure consultant, believed that the two structures are significant. He stated that the views from Sion Hill and Mount Felix toward the proposed project site are not factors that contribute to their eligibility for the National Register. However, he agreed that existing telephone poles, roads and traffic in front of Mount Felix have an impact, and that an observer's experience in visiting or viewing such a site is diminished if there were commercial development or light sources directly beside the property.

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Nevertheless, Dr. Hopkins, apparently relying upon the lines of sight prepared by Frederick Ward Associates, found no reason for an increased buffer, nor any reason to reduce the height of the proposed stockpile.

Having already made a finding that at least portions of the stockpile will be visible from both Lapidum Road and Level Road, during at least portions of the year, the opinion of Dr. Hopkins is rejected. It is found that the stockpile, unless its view is mitigated, will have an adverse impact upon the historic sites of Sion Hill and Mount Felix. Such an impact is above and beyond that normally expected from such a use, given the close proximity of two sites of national interest.

Nevertheless, the impact can be eliminated, or at least acceptably mitigated by the imposition of conditions to increase the proposed buffer, reduce proposed height, and protect and improve the existing forest buffer.

Land Planning Issues.

The overall Arundel property is designated on the 2004 Harford County Land Use Plan as low intensity, agricultural, and industrial/employment. Zoning of the property is both R1 and agricultural.

It appears that the existing quarry operation of Arundel is located within both the industrial/employment district, and within the low intensity district as shown on the Land Use Plan. The proposed stockpile will be within the low intensity district, and will have a zoning of partially agricultural and partially R1.

The Harford County Department of Planning and Zoning Staff Report opines that the proposed use is;

“... generally in compliance with the Goals and Objectives of the 2004 Master Plan and the 2004 Land Use Element Plan. The State has identified and need to protect and manage mineral resources. The Land Use Plan identifies the need to assure the continued viability of these resources, while maintaining a high quality of life for residents. The proposed request would allow the quarry to access the stone resources in an area already approved for extraction. Appropriate conditions for the height of the overburden storage area and buffers from the adjacent residences must be established to reduce impacts on the surrounding community.”

It would be, additionally and fundamentally, unfair to now prohibit Arundel from continued operations in what is a low intensity area on the Master Land Plan when, in fact, earlier zoning approvals had allowed the expansion to this area to take place.

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In reaching this finding the testimony and the position of Mr. Albert Barry, a well qualified and experienced land planner, is not disregarded. Mr. Barry's position was, however, that the Harford County Council in both the 2004 and 1996 Master Plans, had an opportunity to show the entire Arundel quarry site as industrial, instead of partly low intensity. Mr. Barry believed that the County Council's decision not to expand the industrial designation on the Master Plans to the west is an indication that the Harford County Council did not wish the quarry to expand. However, there are simply no facts in support of this opinion and, while it has a certain resonance, cannot be a basis for denial of the requested relief. It is merely speculation, without a foundation in fact. Furthermore, one cannot ignore the actual expansion of Arundel's quarry, plus the construction of the storage pile within the low intensity designated area of the plan, with such activities having taken place for many years, in full view of, and certainly to the knowledge of the Department of Planning and Zoning and others familiar with the site.

It is accordingly found that the proposed expansion does not violate the 2004 Master Plan or Land Use Element Plan.

Nevertheless, Dr. Barry's opinion as to the need to reduce the height limits and increase buffer areas were well considered and persuasive, and form in part the basis for conditions concerning increased setbacks, reduced heights, and increased maintenance of the existing forest.

Health and Air Quality Issues.

Despite a wealth (perhaps excess) of testimony and evidence from the parties on these issues, the position of the parties with respect to the air quality impact of the quarry, and the possible resulting impact on public health was, actually, fairly consistent. Both parties agreed that the impact of dust on surrounding residents has a potential for causing harm and efforts should be made to reduce if not eliminate this hazard.

A significant component of the earth is crystalline silica. It surrounds us. However, when earth is disturbed, as it is in a hard rock mining operation, crystalline silica tends to be released into the atmosphere. Crystalline silica is accordingly a background element in the sense that it can be generated by many diverse activities, and it is in the atmosphere generally. In addition to crystalline silica other elements exist in the atmosphere. These other elements would include combustion products such as those generated by internal combustion engines. Many of these elements are potentially and actually harmful to health.

Compounding the potential hazard which these elements represent is the fact that crystalline silica of a particular size, identified in testimony as "PM 2.5" and smaller, pose particular health hazards.

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Crystalline silica of a certain small size is particularly toxic since it causes lung tissue itself to undergo a process of replacement by fibrous lesion when inhaled. The development of this hard, fibrous material is called silicosis. Silica has also been potentially linked to other diseases. There was much discussion during hearings as to whether the inhalation of silica has been shown to increase the risk of cancer, particularly lung cancer. While the experts disagree, there seems to be no real disagreement that the inhalation of silica is something which is a very pronounced health hazard and is to be avoided.

Of course, there are standards which govern the amount of silica which can be released into the atmosphere. There was little controversy during the hearing as to the existence of these standards, or of the fact that they must be met and not “exceeded”. The dispute between the parties involved the quality of sampling which was undertaken by Arundel in order to determine base levels of crystalline silica, and of the projected levels which increased production rates and movement of overburden would generate.

What is not in dispute is that the actual air monitoring samples did not show any violations of any National Air Quality Standard. Sampling at the quarry was actually performed from April 1997 until November 1997. Sampling then began again from February 1998 and ran through March 1999. According to the testimony of Julian A. Levy, Jr. the sampling protocol matched both the Maryland Department of the Environment and the Environmental Protection Agency protocols. Monitoring stations were situated around the quarry. The sampled air quality was described by Mr. Levy as being good. It was consistent with what was found in other areas, and was well below applicable standards. The particulate matter found was roughly half the daily standard, which Mr. Levy explained as being the National Ambient Air Quality Standard established by the Environmental Protection Agency and adopted by the Maryland Department of the Environment.

In addressing the actual crystalline silica content that was sampled, Mr. Levy stated that it was somewhat lower than typical background levels. Typical background level reported by EPA is a little over 3 micrograms per cubic meter of crystalline silica; Mr. Levy’s findings were about .5 micrograms per cubic meter.¹⁰

While much of the disagreement with Mr. Levy’s findings concerned his projected values, there was no serious dispute as to his actual findings. There is also no dispute as to Mr. Levy’s testimony that the Maryland Department of the Environment monitor located in Edgewood has over the past three (3) years shown compliance with Federal PM 2.5 Standards, and that the Elkton monitor, while it was operating (up until 2001), did not show any exceedance of standards.

¹⁰ The Protestants’ witness, Dr. David Goldsmith, apparently agreed with Mr. Levy’s findings that the average crystalline silica measured at each of the sites in 1997 was approximately .5 micrograms per cubic meter. Continuous exposure at that average level for almost 2,000 years would result in accumulative exposure of about 1,000 micrograms per cubic meter years. Dr. Goldsmith characterized this as being a cumulative risk of close to zero percent (0%).

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Accordingly, it was shown and is found that the actual sampling undertaken surrounding the site, including two monitoring stations located at Meadowvale Elementary School, did not show any exceedance of National Ambient Air Quality Standards for crystalline silica.

As mentioned above, the dispute between the parties preliminarily focused on what projected air quality would be, given Arundel's increased production rates as compared to the time during which Mr. Levy took his samples. Mr. Levy, of course, made his own prediction that there would be no exceedance of any National Air Quality Standard given the production levels and overburden movement activity projected by Arundel. Mr. Levy based his projection on a six million ton per year production rate. Applying the samples he took to that increased production, Mr. Levy again found that values would still be well under applicable standards. His findings were for both PM 10 and PM 2.5 concentrations. Furthermore, Mr. Levy found, based on his modeling, that crystalline silica generation based on six million tons per year would be well below applicable levels.

The Protestants' expert witnesses disputed Mr. Levy's findings for a number of reasons:

- **Mr. Levy's sampling stations were not sufficient or properly situated.** This suggestion was made by Protestants' experts, with no foundation or basis in fact. No attempt was made to present a new design for the layout of sampling stations, or were any specifics given as to where sampling stations should have been located. Without any sort of persuasive evidence to the contrary, it is accepted and found that the sampling stations as located were properly situated so as to give an accurate reading.
- **Mr. Levy did not take into account future production levels.** Mr. Levy indicated he was basing his modeling upon six million tons per year of production. This is the maximum production rate that Arundel would be able to undertake. In fact, six million tons per year is significantly more than Arundel's historical production level, and is 1.5 million tons more per year than it produced in 2004. According, it is found that Mr. Levy's projection of future production levels was accurate, if not overstated.
- **Mr. Levy failed to take into account fugitive emissions.** It was suggested that Mr. Levy failed to properly account for the movement of the overburden pile in his projections. In fact, however, Mr. Levy's base samples were taken during a time that stockpiles were being moved on the Arundel property. Accordingly, it is found that this sampling, and resulting modeling, did take into account overburden movement on site.

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- **Mr. Levy did not correctly compute maximum potential emissions.** This point was specifically made by Maureen Barrett, testifying for the Protestants, who believed Mr. Levy's analysis underestimates maximum potential impacts, particularly of crystalline silica. Ms. Barrett, in doing her own modeling, suggested that the eight hour crystalline silica value exceeded the screening threshold. Ms. Barrett did not question Mr. Levy's actual sampling, only his projection. However, Ms. Barrett was unpersuasive in her projections. She used a "point source model" which assumed all emissions came from an area that was one meter across – a point source. Of course, Arundel is not a point source. Emissions will come from many parts of the quarry. Furthermore, Ms. Barrett indicated that bulldozing is a large contributor to total particulate matter. She assumed six bulldozers operating simultaneously and that the plant were operated at its maximum capacity of 2,000 tons per hour each and every hour, each and every day of the year. In fact, equipment will only operate 5 days per week, from 7:00 a.m. to 5:00 p.m. This assumption is particularly important given the testimony that emissions caused by equipment traffic on site is a major emissions generator. While Ms. Barrett's findings were described as conservative, they are, in fact, not an accurate predictor of future Arundel conditions and emissions. Accordingly, they are rejected and Mr. Levy's projections are accepted as accurate.

Accordingly, while the suggestion was made vehemently and repeatedly, there is simply no credible evidence to support a finding that the modeling and future emissions calculations prepared by Mr. Levy are incorrect. It is therefore found that future emissions of particulate matter, both of PM 10 and PM 2.5 in size, and including crystalline silica, will not exceed National Ambient Air Quality Standards. This finding is further based upon the Maryland Department of the Environment that the Department having determined that the Arundel operation meets applicable Air Quality Standards.

Additional support for this conclusion is presented by the testimony of Dr. William Graham. Dr. Graham, it is found, was an extremely credible and well informed witness who testified as to health impacts of crystalline silica on workers in the Vermont stone industry. Vermont has a substantial surface mining industry, one which has been in existence for many years. This has enabled researches to do studies on the impacts of crystalline silica on its workers over a very long time frame.

Dr. Graham has spent many years studying the effects of crystalline silica on their workers. He has concluded that with proper dust control measures crystalline silica does not represent a health hazard to workers in the quarry industry. Dr. Graham's findings were quite striking in the pointed difference in health effects of stone workers of crystalline silica before the imposition of these safe guards, and after.

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Dr. Graham concluded, based upon his review of the Arundel quarry application, Julian Levy's measurements and findings, and based on a visit to the site that there is no basis at all for concern about any health effect. In fact, Dr. Graham concurred that the levels around the quarry are similar to levels throughout the County.

Of course, even one death or illness caused by silicosis to the residents around the Arundel quarry, and related to the quarry operations, would be one too many. The only truly safe way of determining if the amount of particulate matter, including crystalline silica, in the atmosphere exceeds national standards is to impose a continuing monitoring obligation on Arundel. Arundel has, indeed, itself suggested that such a condition be attached to this decision.

Accordingly, a condition of approval will be that Arundel shall undertake a air quality monitoring program, with reports submitted to the Harford County Department of Planning and Zoning, the Maryland Department of the Environment, and the Environmental Protection Agency on a regular basis, and that those monitored reports shall include measurements of PM 10, PM 2.5, and crystalline silica. These reports shall contain an analysis of whether any exceedance of any applicable air standard is indicated. The reports shall be available to the public upon request.

CONCLUSIONS OF LAW

As discussed above, special exceptions share a presumption that they are in the best interest of the general welfare and are accordingly valid. See Peoples Counsel v. Mangione, 584 A.2d 1318 (1991). A special exception is analogous to a principal permitted use in that it is permitted in its particular district, provided all specific and general conditions are met. There must further be, as part of this analysis, a finding of no greater harm at the proposed location than there would be, by this or a similar use, at any other permitted location within the zone. See Schultz v. Pritts, 291 Md. 1 (1981).

Accordingly, it must first be determined if this particular special exception use meets its general, and then specific requirements.

§ 267-51, **Purpose** of the Code allows special exceptions to be granted;

“... when determined to be compatible with the uses permitted as of right in the appropriate district by this Part I.”

As discussed earlier in this recommended decision, the Harford County Council, by legislatively enacting this use as a special exception, has pre-determined that this use is conditionally compatible with permitted uses in these zones.

Furthermore, the specific requirements of § 267-53E of the Code, **Natural Resource Uses**, must also be met. It is accordingly found that, with the conditions which will be imposed, these requirements are met.

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(1) Mineral extraction and processing. These uses may be granted in the AG, RR, R, R1, R2, R3, R4, RO, VR, VB, B1, B2 and B3 Districts.

The Property is appropriately zoned.

(a) A permit for such use has been approved by the Maryland Department of the Environment.

Such a permit has been approved by the Maryland Department of the Environment.

(b) No building or structure shall be located within 100 feet of any road right-of-way or adjoining property line.

There are no buildings or structures proposed as part of this request.

(c) The following buffer requirements shall be maintained:

(I) All areas in which extraction, washing, crushing, processing, blasting, overburden storage or disposal or similar activities occur shall be at least 800 feet from the property line of any parcel with an R1, R2, R3, R4, VR or RO zoning classification; and

[ii] All areas in which extraction, washing, crushing, processing, blasting or similar activities occur shall be at least 200 feet from the property line of any parcel with an AG or RR zoning classification.

It is found that the Applicant's proposal will meet these requirements. Arundel proposes an 800 foot set back from adjacent R1 zoned properties.

(d) Existing trees and ground cover along public road frontage shall be preserved, maintained and supplemented by the selective cutting, transplanting and addition of trees, shrubs and other ground cover for the depth of the front yard setback. Where it is determined that landscaping is not practical because of soil and/or operation conditions, other screening shall be provided.

With the addition of conditions which will be imposed below, it is found that this condition will be met by the Applicant.

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(e) Any use authorized as a conditional use pursuant to Board of Appeals approval prior to the effective date of this Part 1, as amended, shall comply with the conditions as previously established. Any use authorized after the effective date of this Part 1, as amended, may proceed, subject to the conditions of this section. Where a conditional use or special exception has been granted, any modification or change of operations affecting the conditions or expansion of the use shall be subject to approval by the Board of Appeals.

The Applicant shall be required to comply with all conditions previously established and not inconsistent with this opinion.

(f) The Director of the Department of Planning and Zoning annually shall require all active mining operations that operate subject to a Board of Appeals decision to submit to the Department a certificate of compliance. The certification shall be signed by the Chief Executive Officer and the Plant Operator/Manager of the company which owns the property and shall state whether the mining operation is in compliance with all of the conditions in the Board's decision. The certificate of compliance shall include detailed information to address the conditions imposed as part of the Board of Appeals case. The Director of the Department of Planning and Zoning may require any additional information needed to verify compliance, such as, but not limited to a property line or topographic survey or part or all of the property sealed by a professional land surveyor or registered property line surveyor.

These requirements will be made a condition of this recommended decision.

In addition to the proposed specific and general special exception requirements, the Applicant must in this, as in every action requesting relief from the Harford County Board of Appeals, comply with the requirements of § 267-9I, Limitations, Guides and Standards. This section is intended to provide guidance to the Board in its review of land use applications. It provides wide authority to the Board, including the right to compose conditions or limitations on approvals, but must be applied in light of the presumption that a special exception is in the best interest of the general welfare, and is presumptively valid.

§ 267-9I, first of all, prohibits the approval of an application if the Board finds the proposed use would “adversely effect the public health, safety and general welfare or would result in dangerous traffic conditions or jeopardize the lives of property or people living in the neighborhood.” In order to address these concerns a series of required considerations are then set forth, and are addressed as follows:

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- (1) *The number of persons living or working in the immediate area.*

The Arundel quarry is surrounded by a series of subdivisions, the two most clearly impacted being Meadowvale and Susquehanna Hills. Furthermore, the number of people who reside around the Arundel property has greatly increased from what it was at the time of the 1957 application, and is certainly greater than it was even 10 years ago with the development of Grace Harbor and Bulle Rock. Accordingly, it is found that the number of people living and working in the area is a significant part of the population of Harford County, whose needs must be acknowledged and whose environment must be protected to the extent possible. The conditions below are fashioned, in part, to address these considerations.

- (2) *Traffic conditions, including facilities for pedestrians, such as sidewalks and parking facilities, the access of vehicles to roads; peak periods of traffic, and proposed roads, but only if construction of such roads will commence within the reasonably foreseeable future.*

It is found that existing traffic conditions on Level Road and Maryland Route 155 should not be impacted by the proposed movement of the stockpile. Arundel has and will no doubt continue to mine its property as market conditions dictate. It is allowed to do so even without this approval. The movement of the stockpile will merely expedite the mining of the property and make that operation more efficient. It will not increase what it is otherwise allowed to do.

- (3) *The orderly growth of the neighborhood and community and the fiscal impact on the County.*

The general neighborhood has experienced significant residential growth, and it will continue to do so. However, a large part of the quadrant of land on which Arundel operates, being bordered by the Susquehanna River, Level Road, and Maryland Route 155, is also residentially developed. Much of the surrounding property, particularly that to the south of Maryland Route 155, has been developed, with portions still to be developed. Furthermore, the City of Havre de Grace is undergoing a revitalization which is benefitting the County and the region as a whole. The City's reasonable concerns about Arundel's proposal must be considered. Accordingly, in order to take into account these factors to help protect the orderly growth of the neighborhood and Havre de Grace, to help insure a good fiscal environment, and in order to address the other considerations discussed infra, this recommended approval is conditioned as follows:

- **The overburden stockpile shall be located at a minimum of 1,000 feet from Lapidum Road and a minimum of 500 feet from Maryland Route 155.**

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- **The height of the stockpile shall not exceed 70 feet above ground level at any location and for any reason. Furthermore, the height of the stockpile shall be certified by a licensed surveyor every three (3) months during the construction, with this certification provided to the Harford County Department of Planning and Zoning every three (3) months. These certifications shall be available to the general public upon request.** The purpose of this condition is to provide some assurance that the stockpile will not exceed the height of the existing forest. While it is possible, as discussed above, that the stockpile will be visible somewhat through the forest, it is found to be undesirable that it extend beyond the top of the forest, which would tend to increase its visibility to neighbors and those approaching the City of Havre de Grace.
- **Arundel shall cause to be prepared a Forest Stewardship Plan to maintain and improve the existing forest between Arundel and Lapidum Road and Maryland Route 155 which will constitute the buffer area.** This plan shall included recommendations for increasing the type of trees and plantings within the forest area, for increasing the natural screening which the forest can provide, and recommendations for prevention of disease and to minimize potential fire damage. The goal of such a study shall be to improve and maintain existing forest coverage. The study shall be completed and provided to the Harford County Department of Planning and Zoning within six (6) months of the finality of this decision, and Arundel shall comply with the recommendations of the report. Arundel shall not allow the forest to be permanently damaged by fire or blight. Arundel in those instances shall take all necessary action to reforest the blighted or destroyed areas immediately, and to take actions to encourage and propagate the growth of new forest in those areas. The forest plan shall address these potential problems and shall make recommendations to be implemented in the event of their occurrence.
- **Trees, grasses and shrubs will be planted in the forest and on the news stockpile in a matter to provide diverse habitat. There shall be no other activities of any nature within these buffer areas.**

(4) *The effect of odors, dust, gas, smoke, fumes, vibration, glare and noise upon the use of surrounding properties.*

Clearly, two of the more significant effects of the proposed movement of the stockpile will be the generation of dust and noise. Dust, primarily because of its silica content, is a major health concern, one which all parties have agreed must be controlled. Accordingly, this recommended decision is conditioned upon the following:

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- **Arundel shall maintain at all times a water truck and backup water truck, in good operating condition. The water truck(s) shall be operated at all appropriate times. Specifically, dirt at the point of excavation shall be watered; the haul road to the new overburden stockpile shall be watered; all work on the stockpile shall be immediately halted if a dust cloud develops or if due to climate condition watering is not sufficient to control dust.**

It is found that the dust generated by the quarry operation is a potential health hazard. Arundel has the capacity of generating extraordinary amounts of dust. It is expected that Arundel will take extraordinary efforts to eliminate, or at least reduce, dust to the greatest extent possible. For this reason it is expected that Arundel's water truck will be operating more often than not, and that with the major activity that the movement of the stockpile will necessitate, it is possible that two water trucks will on occasion be operating simultaneously.

- **The Harford County Department of Planning and Zoning will monitor this condition and will act to immediately request a halt in operations if dust reduction efforts by Arundel are not sufficient at any particular time.** Arundel shall comply with the request of the Harford County Department of Planning and Zoning in this regard.

Noise can also be a major impact, indeed both parties have agreed on this. Accordingly, it is found that the following conditions are appropriate in order to reduce the impact of noise:

- **Variable-output, ambient-noise-sensing backup alarms shall be installed on all equipment which will be working on either the stockpiles to be removed, or the newly created stockpile.** Those vehicles shall include all haul trucks, bulldozers, backhoes, water trucks and other tractor or wheeled equipment which will have any occasion to work on the stockpiles.
- **Vehicles and equipment used to remove overburden shall not emit noise at sound levels in excess of that tested by Mr. Staiano.**
- **Arundel may move the stockpile and engage in activities on either of the two stockpiles no earlier than 7:00 a.m., and shall cease at 5:00 p.m. Monday through Friday. There will be no work on weekends. There will be no vehicle start up before 7:00 a.m. There will be no vehicles operating after 5:00 p.m. on any stockpile. The only exception allowed will be the water truck, which may operate for one hour before and after these times.**
- **Arundel shall comply with all applicable State Noise Regulations.**

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- **As the stockpile increases in size a sound barrier/berm shall be created on each lift, as recommended by Mr. Staiano. All stockpile construction shall be phased to require stabilization and vegetation during construction.**

(5) *Facilities for police, fire protection, sewerage, water, trash and garbage collection and disposal and the ability of the County or persons to supply such services.*

Adequate facilities are available to meet these needs.

(6) *The degree to which the development is consistent with generally accepted engineering and planning principles and practices.*

The proposal, as conditioned herein and as discussed above, is consistent with generally accepted engineering and planning principles and practices.

(7) *The structures in the vicinity, such as schools, houses or worship, theaters, hospitals, and similar places of public use.*

The only identified public structure in the vicinity is Meadowvale School. The Arundel quarry clearly represents a potential threat to the students and staff at the Meadowvale School. Indeed, Arundel saw fit to locate two air quality monitors in the vicinity of the school. Nevertheless, while a threat exists, there is no evidence that, with the conditions imposed herein, the health and welfare of the children or staff will be affected by this proposal.

(8) *The purposes set forth in this Part I, the Master Plan and related studies for land use, roads, parks, schools, sewers, water, population, recreation and the like.*

The proposal complies with the Master Plan and related studies.

(9) *The environmental impact, the effect on sensitive natural features and opportunities for recreation and open space.*

The proposal will not interfere with opportunities for recreation and open space. A portion of the Susquehanna Greenway will be located on the Applicant's property, around the base of the relocated stockpile. There has been no identified impact on sensitive and/or natural features, and none is found.

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There may, however, be a potential environmental impact from derogation of the air quality which could result from the discharge of particulate matter, including crystalline silica. The conditions proposed which require frequent and vigilant watering in order to reduce dust, and the reduction in the height of the stockpile (which will reduce the amount of material to be moved), and the increase in buffer areas, should help reduce the impact of particulate matter on the neighborhood. The suggestion was made by the Applicant that the monitoring stations will continue to operate, sampling of particulate matter will continue to be made, and the Applicant shall shut down its operation if crystalline silica is in exceedence of any applicable standard. This suggested condition is specifically adopted herein and is made a part of this recommended approval.

Furthermore, the Applicants' additional suggested conditions are adopted and shall be made a part of this recommended decision.

(10) The preservation of cultural and historic landmarks.

As stated above, it is found that Mount Felix and Sion Hill have the potential of suffering adverse impact by the visual presentation of the proposed stockpile if built according to the plan of the Applicant. This consideration is an additional reason for the height limitation of 70 feet being imposed, and that efforts be made to conserve and improve the existing forest cover.

Furthermore, it must be determined that the use will present no greater harm at the proposed location than would be caused, by this or a similar use, at any other permitted location within the zone. (See Schultz v. Pritts, supra.)

For the reasons more fully described above, it is found that with the conditions which will be appended to this approval, and provided the Applicant operates strictly within those conditions, the proposed relocation of the quarry stockpile will have no greater impact at the location proposed than such a use would at any other location within the zone. This is not to say, however, that the potential for impact does not exist. Clearly, there is a potential for greater impact here than at some other locations within the area. Primarily, this potential impact is caused by the rapid urbanization of the area surrounding the Arundel property, particularly including the present revitalization efforts and growth of the City of Havre de Grace.

Further, one must bear in mind throughout this review process that Harford County is an increasingly attractive area for job location, government expansion, and residential growth. Nevertheless, with adherence to the specific and constraining conditions which are attached to this recommended opinion, it is found that the use can be conducted without adverse impact on the neighbors or neighborhood. While perhaps not the type of use which most of the residents in the surrounding areas or the City of Havre de Grace would prefer, it is nevertheless a use which has been in existence on the Arundel property for over half a century, one which provides a necessary and needed resource, and one which is important to our economy. While perhaps the relationship between the neighbors, City, and Arundel will never be an idyllic one, there is no reason that Arundel cannot continue to grow and prosper, and the Havre de Grace area cannot continue to grow and prosper, with proper controls and with due regard for the reasonable needs and desires of the other.

CONCLUSION

For the above reasons, it is recommended that the requested Special Exception and Modification be granted, subject to the following conditions:

1. The proposed Stockpile shall be located a minimum of 1,000 feet from Lapidum Road and a minimum of 500 feet from Maryland Route 155.
2. The height of the Stockpile shall not exceed 70 feet above ground level at any location and for any reason.
3. The height of the Stockpile shall be certified by a licensed surveyor every three (3) months during construction, with this certification provided to the Harford County Department of Planning and Zoning. Certifications shall be made available to the general public.
4. Arundel shall cause to be prepared and regularly updated a Forest Stewardship Plan to maintain and improve the existing forest between Arundel and Lapidum Road and Maryland Route 155 which will constitute the buffer area. This plan shall include recommendations for increasing the diversity of trees and plantings within the buffer area, for increasing the natural screening which the forest can provide, recommendations for prevention of disease, and recommendations to minimize potential fire damage. The study shall be completed and provided to the Harford County Department of Planning and Zoning within six (6) months and updated at least annually thereafter. Arundel shall not allow the forest to be permanently damaged by fire or blight. Arundel in those instances shall take all necessary action to reforest the blighted or destroyed areas immediately, and to take actions to encourage and propagate the growth of new forest in those areas. The forest plan shall address these potential problems and shall make recommendations to be implemented in the event of their occurrence. There shall be no other activities of any nature within these buffer areas with the exception of Arundel's planned uses of the existing residential structures along Lapidum Road.
5. Trees, grasses and shrubs will be planted on the Stockpile in a manner to promote diversity of habitat, subject to the approval of MDE.
6. The Stockpile shall be vegetated as soon after construction as possible.
7. Arundel shall maintain at all times a water truck and backup water truck, in good operating condition. The water truck(s) shall be operated at all appropriate times. Specifically, dirt and overburden at all points of disturbance shall be watered; and the haul road to the new overburden Stockpile shall be watered. All work on the Stockpile shall be immediately halted if a dust cloud develops or if due to weather conditions watering is not sufficient to control dust.

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8. Arundel shall take all other appropriate and reasonable measures to control dust and to prevent dust from moving off-site. The Harford County Department of Planning and Zoning will monitor dust control measures and will act to immediately require a halt in operations if dust reduction efforts by Arundel are not sufficient at any particular time. Arundel shall comply with the request of the Harford County Department of Planning and Zoning in this regard.
9. The properties identified on Tax Map 44, Parcels 351, 270, 275 and 99, Lots 1 and 2 shall not be used for residential purposes while the proposed Stockpile is being created.
10. Arundel shall undertake periodic ambient air testing to determine impacts from the Stockpile relocation. This testing shall be accomplished with the coordination of the Maryland Department of the Environment. Testing will be performed on not less than a bi-annual basis at monitoring stations recommended by the Maryland Department of the Environment. If no recommendation is made by Maryland Department of the Environment, testing will be performed at those four monitoring stations which were designed and operated by Jules Levy. Interested citizens will be provided an opportunity to provide input regarding monitoring station locations, the time of year and duration for each testing interval. Testing will be performed for PM 10, PM 2.5 and crystalline silica content. The results of such tests shall be filed with the Harford County Department of Planning and Zoning, the Harford County Department of Health, the Maryland Department of the Environment, and the Environmental Protection Agency and shall be made readily available for public inspection. Test results shall contain an analysis of compliance with all applicable Federal, and State standards.
11. Variable-output, ambient-noise-sensing backup alarms shall be installed on all equipment which will be working on either the stockpiles to be removed, or the newly created Stockpile. Those vehicles shall include all haul trucks, bulldozers, backhoes, water trucks and other tractor or wheeled equipment which will have any occasion to work on the stockpiles. All equipment shall be operated with manufacturer installed noise suppression devices.
12. Vehicles and equipment used to remove overburden shall not emit noise at sound levels in excess of that tested by Mr. Staiano.
13. Arundel shall comply with all applicable State Noise Regulations.
14. Arundel may move the Stockpiles and engage in activities on the Stockpiles no earlier than 7:00 a.m., and shall cease at 5:00 p.m. Monday through Friday. There will be no work on weekends. There will be no vehicle start up on any overburden pile before 7:00 a.m. There will be no vehicles operating after 5:00 p.m. on any Stockpile. The only exception allowed will be the water trucks, which may operate for one hour before and after these times.

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15. As the Stockpile increases in size a sound barrier/berm shall be created on each lift, as recommended by Mr. Staiano. All Stockpile construction shall be phased to require stabilization and vegetation during construction.
16. The Applicant shall submit to the Harford County Department of Planning and Zoning a study certified by a radio frequency engineer demonstrating the proposed overburden storage area will not interfere with any public safety communications systems.
17. All other conditions in the previous cases remain in effect unless specifically altered by this approval.
18. The Applicant shall continue to provide the required Certificate of Compliance pursuant to Code § 267-53E(1)(f) to the Harford County Department of Planning and Zoning.
19. The Applicant shall comply with the terms and conditions of the Tower Relocation Agreement dated June 30, 2005 by and between The Arundel Corporation and Chesapeake Broadcasting Corporation.

Date: July 25, 2006

ROBERT F. KAHOE, JR.
Zoning Hearing Examiner

Any appeal of this decision must be received by 5:00 p.m. on AUGUST 22, 2006.